APPENDIX G

Camden Transport Strategy

Evidence Base Report

April 2019

1.0 Introduction

1.1 The CTS sets a vision for Camden. It identifies the most urgent transport challenges and opportunities facing the borough and, in response, proposes a range of policies and measures that will guide future transport interventions and help to deliver that vision. This Evidence Base Report provides more detail on the key challenges along with the background evidence and data analysis that forms the basis of the CTS. It helps to explain how our challenges and opportunities have been identified, particularly within the context of the Mayor's Healthy Streets outcomes outlined below, and why we have established the priority objectives in the CTS.

1.2 The way people travel affects every facet of life, well-being and health, and the economy: air pollution has been proclaimed the most urgent public health issue (UK Environment, Food and Rural Affairs Committee, 2016); the UN's Intergovernmental Panel on Climate Change (IPCC) recently issued stark warnings on the threat of climate change from greenhouse gas emissions (http://www.ipcc.ch/report/sr15/); the health burden of inactive life styles has been framed in similar language. Traffic dominance, growing congestion on London's streets and subsequent delays, particularly to essential freight, undermine the capital's economy, the quality of the street environment and the borough's ability to attract the investment needed to provide the homes and jobs of a growing population, while construction and development to support growth with new buildings and infrastructure also present a challenge.

1.3 The Mayor's Healthy Streets approach (MTS, 2018) provides a framework for assessing streets and places that puts human health and experience at the centre of designing streets and planning for growth. Improving the street environment according to the Healthy Streets approach will ensure that they are safer, cleaner, more welcoming, attractive and inclusive, and where people can be more active, healthier and enjoy a better quality of life.

1.4 Camden's CTS therefore focuses on the barriers to delivering Healthy Streets outcomes and what needs to be done to overcome them. This report addresses each of the challenges in turn as they appear in the core document, particularly

in Chapter 2. The evidence is obtained from multiple sources and is the most up-to-date available.

Figure 1 The Healthy Streets Framework

Source: Lucy Saunders in The Mayor's Transport Strategy (MTS, March 2018)

2.0 Health and well-being

2.1 Transport and health are inextricably linked in multiple and overlapping ways: the combination of noise, toxic pollution, road traffic injuries and deaths, traffic dominance and perception of road danger, severance and carbon emissions/climate change, individually and cumulatively affect the health of all Camden people, and the borough's prosperity.

2.2 Since local authorities assumed responsibility for public health in 2013 they now have a duty to protect public health and integrate the wider determinants of health into the planning and delivery of all local authority services, including travel and transport. Addressing the *determinants* of health means that health outcomes can change and health inequalities are avoidable. This duty therefore offers Camden and this Transport Strategy a vital opportunity to make a major contribution to improving health outcomes and reducing health inequalities. Indeed, no other area of intervention could impact on so many key aspects of

population health: out of a total of 68 measures included in the Department for Health's Public Health Outcome Framework, measures which focus on reducing car use and increasing active travel, could contribute to a third of them (https://www.gov.uk/government/publications/public-health-outcomes-framework-2016-to-2019).

Air quality

2.3 Poor air quality has taken the spotlight in recent years, with two pollutants of particular concern: Particulate Matter (PMs) which affects more people than any other, and Nitrogen Dioxide (NO2) which is a toxic gas. Both contribute to serious respiratory, cardiovascular and lung disease and in some cases cancer. More recent research demonstrates a link with heart failure and a growing body of evidence links pollution to a greater risk of cognitive development in childhood and brain damage throughout life.

2.4 It is estimated that these pollutants together contribute to the premature death of nearly 10,000 Londoners a year, the second biggest cause of premature death after smoking (Understanding the Health Impacts of Air Pollution, Report for TfL and GLA, King's College London, 2015). In Camden, up to 8% of premature deaths are attributed to air pollution. Public Health England expects the number of people in Britain to be seriously affected by air pollution to grow substantially, from around 2 million today to about 2.5 million by 2035. In 2016 the UK Environment, Food and Rural Affairs Committee declared air pollution a 'public health emergency' which costs the UK £22.6 billion a year.

2.5 Road transport is the dominant source of both PM10 and NO2 emissions in Camden, contributing half of all of both pollutants in the Borough (see Figures 2 below) in 2013. Vehicles emit PM10 through their exhaust as well as tyre wear, brake wear, road surface wear and resuspension of road dust, while diesel is the main factor in NO2 levels which is produced during the combustion process. In Camden, locations that have higher levels of exceedence of the standard are totally linked to the road network.

2.6 60% of micro-plastics released into the ocean are from car tyre wear and chemicals in the plastic can disrupt digestion and inhibit disease resistance. A report by Eunomia Research and Consulting indicates that vehicle tyres are the single biggest cause of microplastic in 'surface water' – rivers, lakes, wetlands and oceans in the UK (Reducing Household Contributions to Marine Plastic Pollution, 2018).

2.7 People are also twice as likely to be affected by pollution in areas of higher deprivation as these areas include or are generally closer to heavily trafficked streets and main roads which suffer poorer air quality (Air Quality and Social

Deprivation in the UK, An environmental inequalities analysis, Report to the Department for Food, Rural Affairs and Rural Affairs (Defra), 2006). The close links between air quality and deprivation are present in Camden: 70,000 residents are living in areas which are among the top 30% most deprived areas which are also in the top 30% in terms of average NO2 concentrations in the UK.

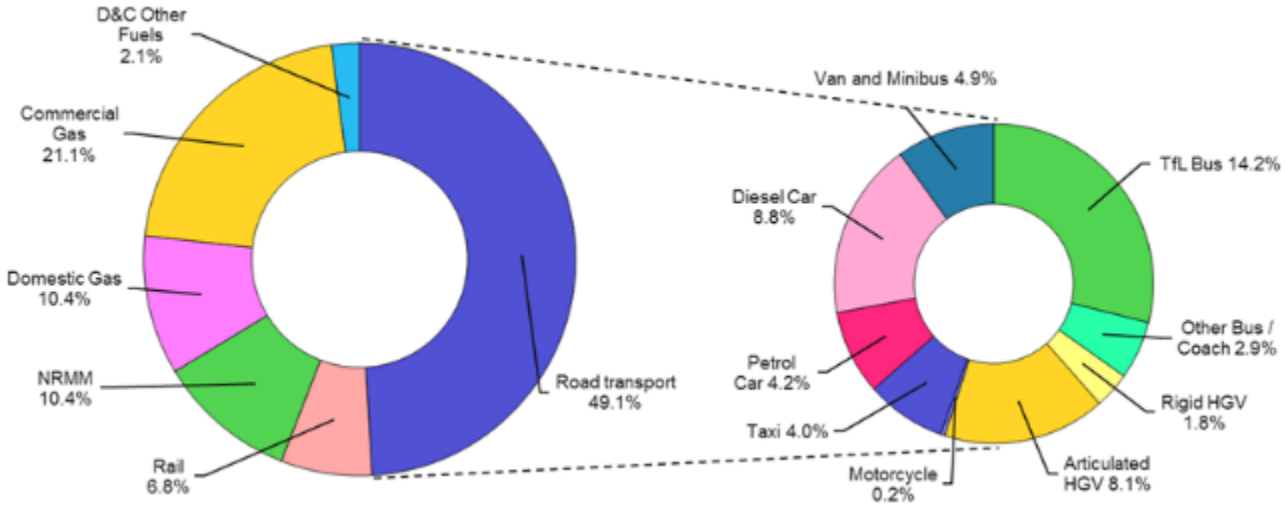
2.8 Poor air quality has a particularly detrimental impact on children (Defra, 2006). It affects lung development which makes them more susceptible to infection and disease as they grow. They are also more vulnerable to polluted air than adults: for their size, they breathe more air each minute than an adult and buggies, and prams put them at the level of car exhausts. 87 of the borough's 112 schools are located in areas that are in breach of EU NO2 levels. 12 of the 100 worst affected primary schools for NO2 concentrations in London, and 8 of the 100 worst affected secondary schools, are in Camden (Mayor of London, 2016).

2.9 Research also shows a link between pollution and dementia, with the damage starting early in life; living in polluted areas may increase the risk of dementia by 40% (https://bmjopen.bmj.com/content/8/9/e022404 BMJ, 2018). Older people may be more susceptible due to existing illnesses; and pregnant women are also more vulnerable as evidence suggests that particulates can affect child development during pregnancy.

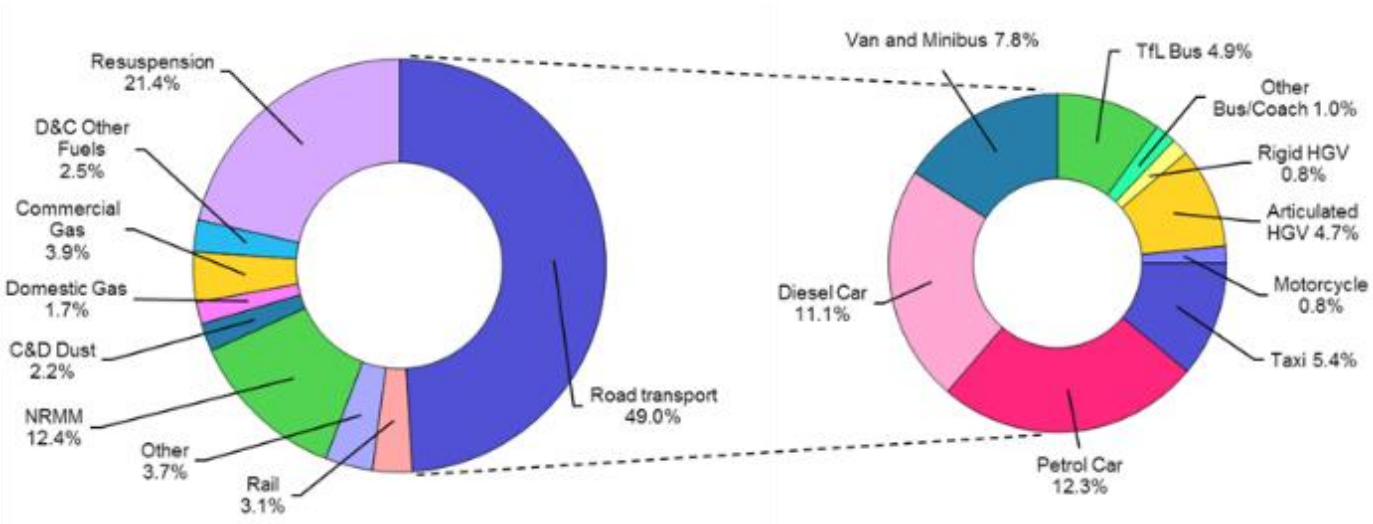
2.10 The health cost (to the NHS) of an average car in inner London over the vehicle's lifetime is nearly £8,000; for diesel cars this figure is nearly double. Pollution costs London's economy £3.7billion a year (London Environment Strategy, Mayor of London, 2018). Rail also makes a contribution to poor air quality in Camden. While most trains coming into Camden are electric some diesel trains are still used on the lines, particularly for engineering works. Although Network Rail has ambitions to reduce diesel trains, many trains are not due for an upgrade for several more years.

Figure 2 Air quality in Camden

Sources of NOx in Camden in 2013



Sources of PM_{10} in Camden in 2013



Source: London Atmospheric Emissions Inventory (2016)

2.11 Reducing pollution is a top priority for the Council. Like many London boroughs Camden has typically been in breach of the national air quality objective for NO_2, although the objective for PM_{10} has been met at all Camden PM_{10} monitoring sites since 1998. In January 2018, Camden became the first London council to formally adopt the World Health Organisation's (WHO) Air Quality Guidelines for particulate matter (PM) which are stricter than EU standards as outlined in Table 1 below. This commitment has consequences for Camden.

Table 1. UK national air quality objectives and WHO air quality guidelines for annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$.

Pollutant species	UK national air quality objectives	WHO air quality guidelines
NO_2	40µg/m^3 (from 1 January 2006)	40µg/m^3
PM_{10}	40µg/m^3 (from 1 January 2005)	20µg/m^3
$PM_{2.5}$	25µg/m^3 (from 1 January 2021)	10µg/m^3

2.12 Although all Camden's PM monitoring sites comply with the UK national air quality objectives, two of three sites recorded annual mean PM_{10} concentrations above the WHO guideline objective (20µg/m^3) in 2017, and all three were at least 35% above the objective for $PM_{2.5}$ (10µg/m^3).

2.13 Two of Camden's streets – Holborn and Euston Road – are among the worst 20 streets in London for air pollution, where NO2 is double the UK objective. Annual mean NO_2 in 2017 for our automatic station on Euston Road was 83µg/m^3. This is much higher than the World Health Organisation's guideline and the national objective of 40µg/m^3. Annual mean PM_{10} concentration in 2017 was 20.3µg/m^3 and $PM_{2.5}$ was 13.6µg/m^3, both below the respective national air quality objectives (40µg/m^3 for PM_{10} and 25µg/m^3 for $PM_{2.5}$) but above the WHO guidelines we adopted this year.

2.14 Moreover, modelling (which does not include Camden-specific measures), finds that, to 2030, while NO_2 concentrations are within both the UK national air quality objective and WHO air quality guideline at almost all locations in the Borough, PM_{10} and $PM_{2.5}$ concentrations are expected to rise from existing levels and to exceed the WHO guidelines at all locations.

2.15 Background sources of PM have such a strong influence on total concentrations and levels of PM in Camden are affected by sources elsewhere in Central London. This demonstrates that, whilst we must continue to reduce and remove all sources of NO_2 and PM within our capacity in Camden, we also need to work with other London boroughs and the Mayor, to reduce sources outside the borough, and so that we can achieve our LIP and meet WHO guidelines.

2.16 The whole borough was declared an Air Quality Management Area in 2000, and Camden produces Air Quality Action Plans over 2-year periods to address the problem. Camden is currently preparing a new Action Plan for 2018 onwards which has been the subject of stakeholder engagement and will also undergo a period of public consultation. Measures that relate to transport have been included in the CTS where appropriate and additional recommendations to the Action Plan following the public consultation will also be considered in the amended CTS.

2.17 There are several sub-regional and London-wide initiatives underway to address air quality, which are also an opportunity to clean Camden's air. These include the proposed introduction of London's Ultra Low Emission Zone (ULEZ) in 2019, and the Mayor and the UK's Office for Low Emission Vehicles' OLEV's support for electric vehicles (EVs), including plans for electrifying TfL's bus fleet. These will go a long way towards helping Camden comply with WHO guidelines by the target date. However, regardless of guidelines, all Councils have a legal duty to reduce all levels of all pollutants and there is no 'safe' level.

2.18 Camden is currently planning to roll out a network of electric vehicle charge points (EVCPs) to support the uptake of electric vehicles, more detail of which is provided in the accompanying Electric Vehicle Charging Point Action Plan. In London, Camden has the third highest proportion of Electric Vehicles (EVs) in its total private vehicle stock, after Westminster and Barnet (Electric Vehicle Charging Infrastructure, TfL, 2017). Camden's parking permit data also shows that the number of EV permits issued has grown since 2009, with the most significant increase since 2016. Meeting current demand for EV charging is a priority. We must also plan for predicted growth which will likely result from Mayoral measures as well as those in the CTS, and also encourage and accelerate further uptake including among different types of users, such as taxis, freight, car clubs and Camden's own fleet. The EVCPAP therefore includes a range of infrastructure to meet different needs, including rapid chargers (55kw), fast charging (22kw), charging from lamp columns for residents, expanding the on-street, open access Source London network.

2.19 However, there are also limits to EV technology: EVs will help to address NO2, but there is conflicting evidence on their ability to address PMs. Given the Council's commitment to meet WHO guidelines on PMs, as well as address other challenges outlined in this Report and delivering the Mayor's Healthy Streets outcomes, Camden's priority remains reducing vehicle traffic as a whole and encouraging a switch to walking, cycling and public transport use rather than switching types of vehicle.

2.20 Camden also faces a challenge to upgrade its own fleet: the ambition is for all vehicles below 3 tonnes to be electric by 2022, while those larger than 3 tonnes will rely on Compressed Natural Gas (CNG). The technology for alternatively fuelled larger vehicles is not widely available and the cost of vehicles is prohibitively expensive, particularly in the context of limited public sector funding. This means that it will take a long time to recoup the cost.

2.21 There is also a concern of insufficient power capacity on the grid for the infrastructure especially during periods of high domestic demand. The source of the energy supply, such as fossil fuels, as well as the reliance on rarer metals in the EV production process are also a concern.

Carbon emissions

2.22 CO2 is the principal greenhouse gas related to climate change which is associated with extreme weather incidents such as storms, flooding, heatwaves and drought which affect food and water security, infrastructure and the spread of infectious diseases. It is estimated that around 300,000 homes in London are at risk of flooding from surface water, and in 2002 flooding in Camden incurred over £1million in costs (London Borough of Camden). And London is forecast to have a resource 'gap' of over 100million litres a day by 2020, rising to 400million litres a day by 2040. Extreme weather incidents will increase in frequency and become more severe (UK Government's Risk Assessment, Defra, 2012).

2.23 Transport accounts for nearly a quarter of London's greenhouse gas emissions. Road transport is the second biggest contributor to Carbon Dioxide (CO2) both in London and Camden (Atmospheric Emissions Inventory, AEI, 2013), after domestic and commercial gas, with both petrol and diesel cars being the dominant sources.

2.24 The UN's Intergovernmental Panel on Climate Change (IPCC) recently issued its most stark warning yet on climate change, in its report on temperature increases (Global warming of 1.5 degrees, an IPCC Special Report on the Impacts of Global Warming, October 2018). Urgent and unprecedented changes are needed to keep global warming within the parameters of 1.5°- 2°C based on pre-industrial levels. Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels already, and it is likely to reach 1.5°C between 2030 and 2052 if it continues at the current rate (IPCC, 2018). But the IPCC warns that reaching a 2°C increase would be catastrophic as the difference between 1.5°C and 2°C is substantial.

2.25 The Mayor of London has set a target to make London a zero carbon city by 2050, and central London zero carbon by 2025. And while London's greenhouse emissions have been falling it is not adequate to avoid the worst impacts of climate change. Greenhouse gas emissions must reduce from the current level of around 8.3 Mt a year to 1.5Mt by 2050. Reducing reliance on energy sources that contribute to CO2, including those from motor vehicles, will be essential.

2.26 Increasing the amount of green space and green infrastructure can also help to mitigate the impacts of climate change: parks and green spaces, trees, wooded areas and waterways can play a significant role in helping to cool the air during heat waves, and absorb pollutants, particularly trees which act as carbon sinks. Planting also secures the soil, preventing the erosion of top soil also helping to slow water-run off and flooding. Urban greening, such as green roofs, can also hold storm water. Greening also improves opportunities for recreation and health improvements, as well as increase biodiversity and ecological resilience.

2.27 Such measures also provide an economic benefit: the contribution of public parks and green spaces to improving public health has been valued at £5bn, with each £1 spent on public green space providing at least £27 of economic value. And London's trees remove over 2,000 tonnes of pollution a year, and store over two million tonnes of carbon a year worth £147 million. London's green spaces provide services to an estimated value of £5billion a year (London Environment Strategy, Mayor of London, 2018).

2.28 Regent's Park, Primrose Hill, Hampstead Heath as well as many other smaller parks in the borough and the canal mean that Camden's residents and visitors can enjoy extensive green space provision. However, we must ensure that it is not eroded as part of development and economic growth.

Other emissions

2.29 In addition to carbon dioxide, there are several other transport related pollutants and greenhouse gas emissions such as benzene, carbon monoxide and hydrocarbons. These are ground based emissions and, even though they are not subject to regulation, are particularly harmful to health. Motor cycles are a major source of these pollutants, in some cases emitting significantly higher levels than a car.

Noise

2.30 Other environmental factors such as noise also impact on health in major ways, over and above emissions. Studies show that noise from transport is associated with annoyance, stress, sleep disturbance, and impaired cognitive performance, leading to increased incidences of arterial hypertension, the development of cardiovascular disease, the risk of coronary artery disease and stroke (Environmental Noise and the Cardiovascular System, Thomas Münzel, MD et al, Journal of the American College of Cardiology, 71:6, 2018). One case study cited in the research, based on 8.6 million residents of London, found that road traffic noise was found to significantly increase risk for stroke hospitalization, and there is consistent evidence that road traffic noise leads to heart attacks.

2.31 There is little information on noise and vibration generally across the Borough. Figure 3 shows estimated levels of road traffic noise, which is the primary noise source in most parts of the Borough. This is based on the strategic noise mapping exercise undertaken by the UK Government in 2012, and results are shown for LAeq,16h, which is the annual average noise level (in dB) for the 16-hour period between 0700-2300.

Figure 3 LAeq 16-hour road traffic noise levels in Camden (2012)

2.32 It is evident from Figure 3, and from Camden's ongoing annual speed monitoring that several main roads carrying high volumes of traffic are the main areas affected, and which impact on those residents who live close by, in particular Euston Road, Finchley Road and Kentish Town Road. And, as with air quality, it is also expected that the impact will be greatest on our most vulnerable and deprived communities. Efforts therefore need to focus on working collaboratively with TfL, neighbouring boroughs and other stakeholders to mitigate the impacts.

2.33 New night time public transport provision also brings added noise to residential areas, both from the underground as well as night time bus services. Concerns have been raised about night time bus services at several locations in the borough, including at Highgate and in Dartmouth Park.

Physical activity and obesity

2.34 Physical inactivity is another urgent health issue. Regardless of weight, an inactive lifestyle is a leading cause of disease and disability (WHO), including for example osteoporosis, resulting in an increased likelihood of obesity which brings its own set of additional problems: obesity is the second biggest cause of lifestyle related cancer. In the case of inactivity among children, it has been referred to as a 'time bomb' by the UK's National Health Service due to the predicted disease impacts in later life, and a record number of Year 6 children are now obese. There is an urgent need to get people moving, according to WHO, which warns that a quarter of the global population – and more in wealthy countries – are becoming less active, damaging their physical and mental health. The UK cost of obesity related illness is likely to rise to £24 billion a year by 2025 which, health chiefs warn, threatens to bankrupt the health service.

2.35 The UK Government's Chief Medical Officer's (CMO) recommendation for minimum physical activity levels is 150 minutes a week for adults and one hour a day for children. Making a journey on foot or by bike can help people meet their minimum physical activity levels. Indeed, active travel is likely to be *the* main way that Londoners meet their physical activity needs and, according to the UK Faculty of Public Health, active travel *is the only viable option for significantly increasing physical activity* levels across London's whole population. Over 40% of London's adults do not meet the minimum recommended levels for physical activity, although the average for London is slightly lower at 32%.

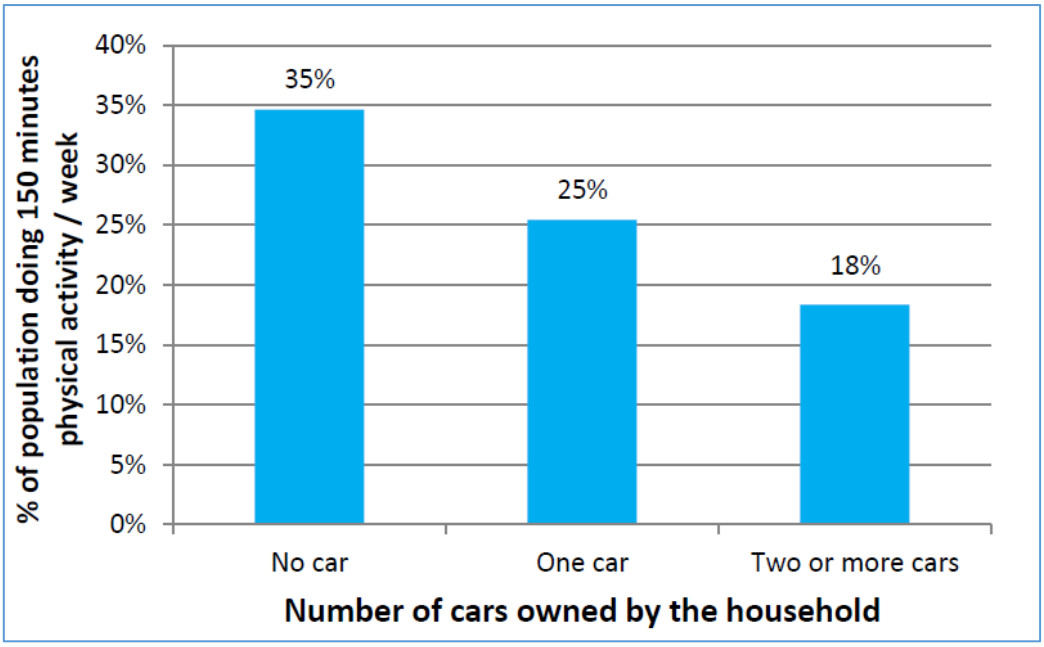
2.36 Yet, if Londoners swapped motorised trips that could reasonably be walked and cycled, 60% would meet the recommended 150 minutes of physical activity per week through active travel alone, a rise from 25% who currently meet the target from walking and cycling. The population of London would gain over 60,000 years of healthy life every year and an economic health benefit of over £2 billion annually (GLA). And active travel remains extremely important for the maintenance of independence and activities of daily living, particularly for an aging population.

2.37 The importance of active travel is also acknowledged by the National Institute for Clinical Excellence (NICE) which calls on transport planners to *prioritise* pedestrians and cyclists over cars through the use of Copenhagen-style cycle infrastructure and traffic restrictions to avoid the significant personal as well as societal health burden that accompanies inactive lifestyles.

2.38 Yet the consequences of increasing car use has suppressed walking and cycling levels: car ownership is a determining factor in levels of activity, with levels decreasing significantly as household car ownership increases (Travel in London Report 9, TfL, 2016 and also Figure 4 below). Activity levels also fall with frequency of car trips.

2.39 In London children living in households without access to a vehicle are 2.3 times more likely to walk to school than children living in households with vehicle access. Obesity levels also rise with car ownership. At the same time this increases the risk (both actual and perceived) of injury for pedestrians and cyclists which further deters people from making healthier, active travel choices. The GLA reports that each additional hour spent travelling in a car per day is associated with a 6% increase in the likelihood of becoming obese, while each additional kilometre walked a day is associated with a 4.8% reduction. This means that efforts to encourage more walking and cycling must also address car ownership and use.

Figure 4 Percentage of the London population meeting the recommended 150-minutes per week physical activity through active travel, by household car ownership, 2013/14.



Source: GLA, the Health Impacts of Cars (2015)

Table 2 Proportion of London residents' car trips by distance, with average time taken to walk or cycle.

Proportion of all car trips	Walk time (fast-medium pace)	Cycle time (16km/hr)	Distance travelled	
			km	miles
15%	**Up to 9 - 12 mins**	Up to 4 mins	< 1	< 0.62
21%	**Up to 19 – 25 mins**	Up to 8 mins	1 – 2	0.62 – 1.24
13%	Up to 28 – 37 mins	**Up to 11 mins**	2 – 3	1.24 – 1.86
18%	Up to 47 – 62 mins	**Up to 19 mins**	3 – 5	1.86 – 3.11
34%		>19 mins	>5	>3.11

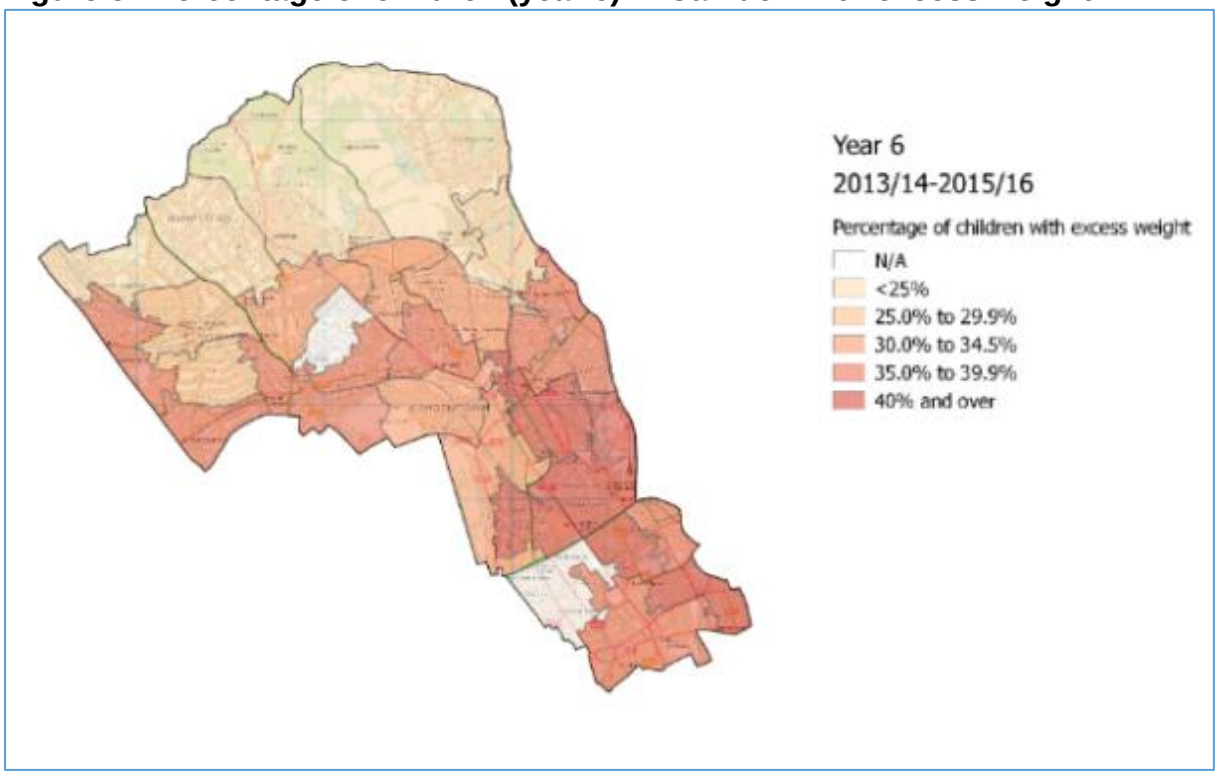
Source: GLA, the Health Impacts of Cars (2015)

2.40 68% of Camden's adult population is classified as 'active', ie meeting the CMO recommended levels, although one in five Camden adults is inactive, taking less than 30 minutes of physical activity per week. At just over 26%, the proportion of women who are active is lower than that for men at nearly 34%. People over 70 years are the least active age group, with nearly 8 in 10 older people not doing 3 x 30 minutes of activity per week.

2.41 This data is similar to London and England. At 42.7%, a statistically significant smaller proportion of Camden adults are overweight or obese compared to London and England, although there is an unequal distribution around the borough. The difference between BME groups and 'white' people is also very small – less than 1%.

2.42 There is a particular concern with young people, the majority of whom do not undertake the minimum required levels of physical activity. Just one in eight 15 year olds meet the required levels of 60 minutes of activity a day, with 68% categorised as sedentary. Growing obesity among young people already manifests itself by Year 6.

Figure 5 Percentage of children (year 6) in Camden with excess weight



Source: London Borough of Camden 2018

2.43 Increasing the level of physical activity through walking and cycling among Camden's resident population will be essential for ensuring a healthy population. And even though older people are the least active, staying active is particularly important for the elderly, with studies finding that older individuals who began a regular exercise programme experiencing improved cognitive function which may help to ward off dementia (PubMedCentral – PMC, National Institute of Health, USA, October 2013). They also show that staying connected through social activities is also a major factor in preventing mental decline. Transport therefore has a key role to play in ensuring the health of an aging population, by helping people to stay active (through active travel) and connecting them with social networks. Understanding and addressing the barriers that people face to active travel is therefore a consideration for the CTS.

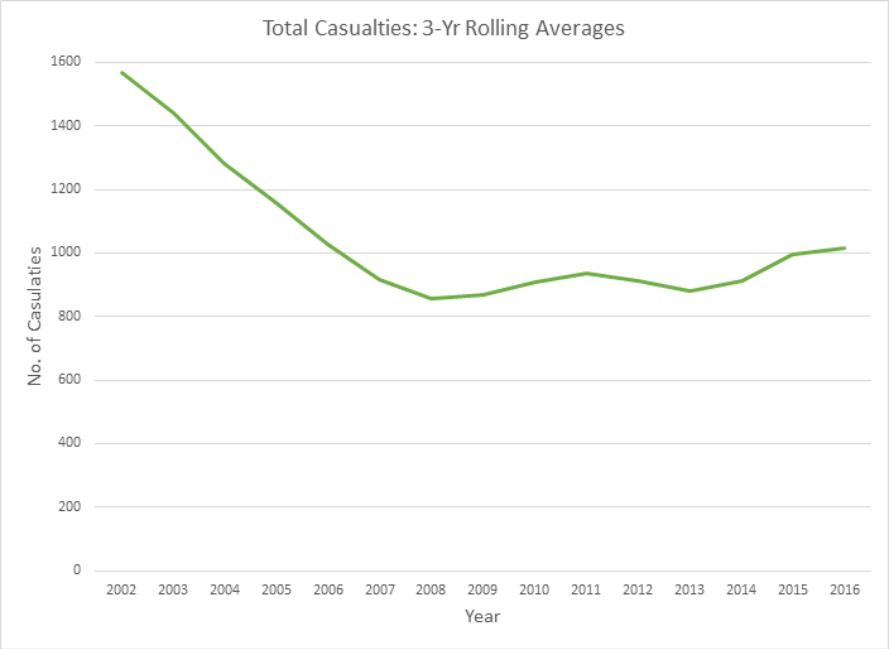
Road danger and casualties:

2.44 London has one of the highest casualty records among 15 major European cities. In Camden there has been an upward trend (for three year averages) for all road casualties. This has been mainly influenced by the rise in casualties categorised as 'slight', particularly in the most recent five year period, while casualties categorised as Killed or Seriously Injured (KSI) have fallen significantly in the last 10 years. However, it should also be noted that, for individual years and comparing 2015 and 2016 specifically (rather than three year averages), fatalities in 2016 remained at the same level (total of 4) as the previous year, while those

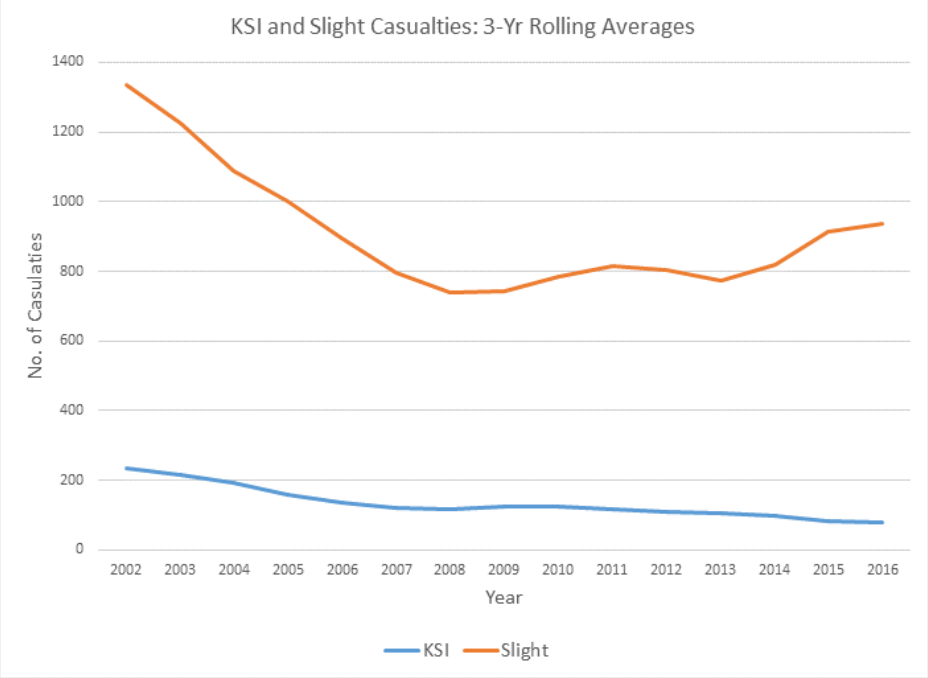
categorised as serious increased 18% from 74 to 87. Camden will need to ensure that this does not signal a reversal of achievements over the last decade.

Figure 6 Casualty trends in Camden – three year averages

Total traffic casualties



Slights, Killed and Seriously Injured (KSI) caualties



Source: London Road Safety Unit, 2017

2.45 It is also the case that people outside the vehicles are disproportionately affected and assume greater risk of injury relative to their mode share or journey distances taken. For example, in London in 2016, cyclists comprised 18% of all KSI, whilst cycling only represented two per cent of all trips made in London. This is also evidenced in Camden: among Camden's total casualties, cyclists made up the largest proportion at 234 (over 25%), with 214 pedestrians (23%) the second. While both these modes also show a reduction on the previous year (of 3% and 10% respectively), the biggest drop was among car occupants (23%) and motor cyclists (15%). The same is true for KSI: three of the four fatalities (75%) and 68 of the 87 serious casualties (78%) involved pedestrians and cyclists, with most KSI involving pedestrians (45%) (London Road Safety Unit, 2018).

2.46 Analysis of the casualty data (Stats 19 data) shows that 79% of all KSI for people cycling happen at or near a junction, with 'failing to look', passing too close to the cyclist, poor turns, and excess speed as the most frequent contributory factors assigned to the other vehicle(s) involved. However, while taxis and private hire vehicles are involved in 9% and heavy goods vehicles 5% of cyclist KSIs, taxis are disproportionately involved in these collisions relative to their traffic share in London. Data from the Mayor's Vision Zero Action Plan (2018) shows that taxis are 1.68 times more likely to be involved in collision with a cyclist resulting in a KSI relative to their share of traffic – the second highest after buses and coaches.

2.47 Evidence also shows that people who walk and cycle more are less likely to own a car: this suggests that the car owning population is disproportionately impacting on non-vehicle owners.

2.48 It should be noted that data for 2016 may not be comparable to previous years due to the change that was introduced that year in the way that casualties are reported by the police. This resulted in more casualties being recategorised as 'serious' rather than slight that year, and in future years. The casualty and Vision Zero targets in Chapter 5 of the main Strategy reflect this change and have been amended in line with a new back-casted KSI trajectory provided by TfL, together with an explanation. However, Camden accepts that KSIs need to be addressed as a priority and more needs to be done to address safety, particularly for vulnerable road users.

2.49 Camden supports the Mayor's plans for Vision Zero. Vision Zero is based on the view that deaths and serious injuries from collisions on the roads are neither inevitable nor acceptable; rather they are the result of a number of factors coming together, many of which are preventable.

2.50 Vision Zero adopts a road danger reduction approach to road safety, ie reducing the *source* of the danger, particularly risky behaviour among drivers as this is likely to have a greatest impact on road safety. Vision Zero also adopts a broader

approach to road safety beyond a traditionally reactive response to addressing casualty numbers and severity, and where these are occurring. For example, a lack of casualties may not mean that a street is safe, rather it may be perceived to be too dangerous for people to venture there, particularly on foot or by bike, or by specific groups. Vision Zero takes a pro-active approach which considers the level of risk so that we can prevent collisions occurring in the future, with a focus on an outcome where more people will chose to walk and cycle.

2.51 Camden takes a similar approach: following a prolonged period of implementing traffic calmed 20mph zones around the borough which saw a significant reduction in casualties, in December 2013 we introduced a borough-wide 20mph speed limit on all remaining borough roads. Speed is the single biggest determinant of injury risk, affecting both the potential for a collision to occur and the severity of the outcome (Vision Zero Action Plan, TfL, 2018): If a pedestrian is hit by a vehicle at 20mph, they are about five times less likely to be killed than if they were hit at 30mph. Reducing speed and ensuring compliance are therefore fundamental to achieving Vision Zero.

2.52 Our regular annual monitoring of the borough-wide 20mph speed limit on over 130 streets throughout the borough shows that, at a borough level, aggregate speeds have reduced year on year since it was introduced in December 2013. Nevertheless, there is much more to be done. There are still some specific locations where speeds continue to be problem. This includes working in partnership with the police to undertake Community Speed Watch enforcement where residents, working alongside the police, use speed guns to capture excessive speed which the police follow up with warning letters to drivers. The Council is also investigating opportunities to work with the Met Police to deliver a similar Community Speedwatch scheme in partnership with schools to address problems on streets in the vicinity of school buildings.

2.53 New and emerging technology also offers the Council additional opportunities to improve compliance with the speed limit. Camden installs flashing Vehicle Activated Signs (VAS) on streets where there is evidence of a speeding problem and which can be moved around in response to regular updated survey data. Recently the Council introduced VAS which capture vehicle details such as registration numbers, to augment the Speed Watch project, where these details can be passed directly to the police for their action.

2.54 The emergence of mandatory Intelligent Speed Adaptation (ISA) is also of particular interest as it offers significant opportunities to improve compliance with the borough-wide 20mph speed limit. The Council is aware that, following successful trials by TfL in 2015, the technology is being adopted on all new buses from 2018, and all buses will be fitted with mandatory ISA by 2022. There are opportunities to broaden uptake, including for example, among Camden's own

fleet, through procurement (such as Camden's waste vehicles) and through the planning process for construction activity, and car clubs operating in the borough. The Council can also lobby TfL to install mandatory ISA in taxis and PHVs, and FORS and CLOCs accreditation to include ISA as a criteria.

2.55 The Council currently does not have powers to enforce speed limits or fine drivers for speeding; this is a responsibility of the police. The Mayor has indicated an intention to request the decriminalisation of speeding offences and devolved powers of enforcement to local authorities. The Council will monitor developments and investigate the implications for the borough.

2.56 Understanding other risk factors in collisions is a major part of our approach to road safety which is included in our Road Safety Action Plan. In addition to looking at KSI hotspots to prioritise our road safety programme, in partnership with TfL, Camden has embarked on an extensive and robust street audit which investigates collisions and casualties on all links and nodes in the borough, linking the information with our annual speed monitoring data on over 140 borough streets which is part of our 20mph speed limit Action Plan.

2.57 This analysis looks at all the main contributing factors in collisions to assess road risk. For example, initial data shows that there is a high number of collisions occurring at night which suggests that measures such as improving lighting could reduce risk. Similarly, collisions which involve overtaking parked cars as well as on the approach to junctions also figure highly. This data will also be used alongside other evidence, such as TfL's Propensity to Walk and Cycle, to pro-actively future proof areas to minimise risk to enable an increase in those modes. It can also be applied to growth areas, where we expect a significant increase in the demand on the transport network, to minimise risk to larger numbers of people. More detail is provided in our Road Safety Action Plan.

2.58 Alongside speed restrictions, the Council uses a basket of measures such as campaigning and publicity, skills training and education, and changes to the street layout to minimise the potential for a collision and reduce traffic volumes.

2.59 Over 20% of Camden's KSI in 2016 occurred on the TLRN – streets which are managed by TfL (London Road Safety Unit, 2017). Indeed, proportionately, based on road length, there are more KSI on the TLRN than on Camden's own road network. Camden will continue to lobby TfL to improve road safety on the TLRN, including making their roads 20mph in line with Camden's 20mph.

2.60 The perception of road danger and fear of traffic are also challenges, particularly among vulnerable people such as children, older people and those with an impairment. This is discussed elsewhere in more detail in the Strategy and in this Report in Sections 6 (Accessibility and Inclusion) and Section 10 (Summary)

which looks at barriers to walking and cycling. Regardless of casualties, traffic volumes, speed and the size of vehicles, create an intimidating environment where people do not *feel* safe and which deters them from using public space and making active journeys. This significantly affects their mobility, health and independence, and increases isolation. The Council will continue to address the perception or fear of traffic through our initiatives to reduce and restrict traffic volumes as part of our transport interventions, as well as our School Travel Plan and Healthy School Streets programmes and working with vulnerable groups.

Mental health

2.61 Regular physical activity and social interaction have a positive impact on nearly every aspect of psychological well-being. Urban living creates several challenges: despite the potential benefits of living in a world city and cultural centre, with numerous opportunities for leisure and enjoyment, over 52% of Londoners feel lonely or are isolated (BBC, 2013), with impacts on mental health. Promoting face-to-face interaction and expanding mobility have been proposed as the main solutions.

2.62 Keeping active has huge benefits for well-being: people are less likely to be depressed, anxious or tense and are more likely to feel better about themselves; they are more likely to sleep better and cope with stressful situations (https://www.nhs.uk/live-well/exercise/exercise-health-benefits/). They are also more likely to keep mobile and independent as they get older. More recent research is also demonstrating positive links between physical activity and a reduced likelihood of memory problems or dementia (NHS).

2.63 And by creating public spaces that are both safe and social, cities can facilitate natural interactions between people, reducing isolation and improving well-being. This is demonstrated by our work with Kilburn Older Voices Exchange (KOVE), a local stakeholder group representing older people in the borough. With support from Camden, KOVE has commissioned films looking at barriers to older people and those with a disability using streets which identified lack of seating, public toilets, inadequate crossing times and street clutter as barriers. Camden also worked directly with KOVE to help develop an area-based scheme in Kilburn, particularly interventions which will help people to cross the busy and wide Kilburn High Road. Studies in the US and Europe have also found that a more walking friendly neighbourhoods are associated with greater levels of social interaction, sense of community, social capital and attachment to place with residents less likely to be depressed, and more likely to have better physical and mental health (Honold, J. et al, Urban Health Resources: Physical And Social Constitutes Of Neighbourhood Social Capital, Procedia Social and Behavioural Sciences 131 (2014) 491-496, Elsevier).

Severance

2.64 Car use and traffic dominance also increases severance: destinations that are geographically close cannot be reached easily on foot due to heavily trafficked, wide roads that may be difficult to cross and perceived to be dangerous. People on low incomes are generally disproportionately affected as they are more likely to live close to main roads, such as in St Pancras and Somers Town and King's Cross wards, close to Euston Road, and NW6 wards by Kilburn High Road and Finchley Road.

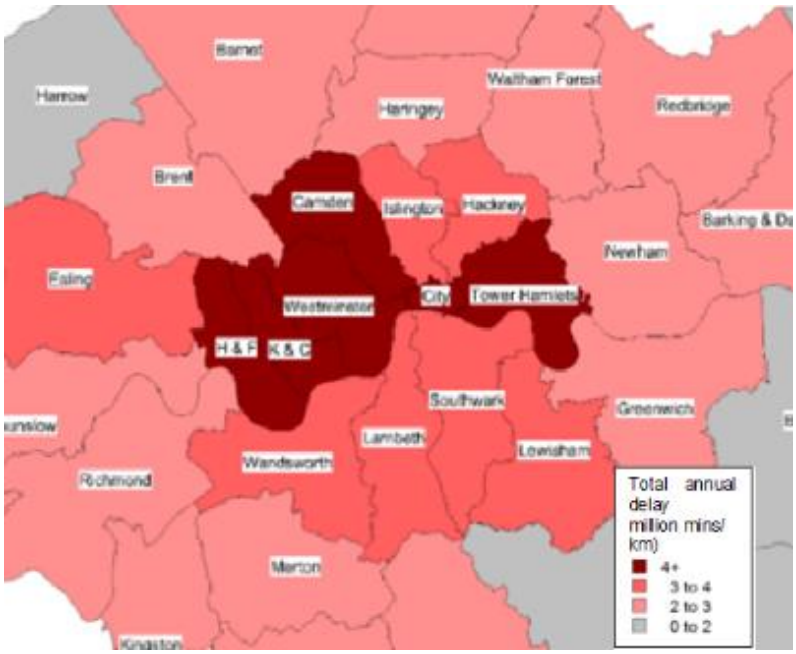
2.65 Severance has a wide range of effects including restriction on independence, particularly among children and young people as well as those with a disability. Heavy traffic also reduces the likelihood of healthy active travel which could deliver health benefits. It also reduces social interaction and increases isolation as people fear going out.

3.0 Congestion and parking pressure

3.1 London is one of the most congested cities in Europe and, despite the Congestion Charge, congestion has worsened in recent years (Global Traffic Scorecard and London Congestion Trends, Inrix, 2017). Vehicle delay times are highest in Central London, including in Camden, and the greatest increases in delays have also occurred in Central London, as shown in Figures 7 and 8 below (Total Vehicle Delay for London, TfL, 2014-15). As well as its effects on individuals' wellbeing and quality of life, congestion has a detrimental impact on London's economy. Traffic delays cost London £5.5 billion in 2014/15, with £2 billion of that occurring in central and inner London, a 30% increase over the previous two years (London Congestion Trends, Inrix, 2016). With growth, this is set to increase to an annual cost of £9.3billion – both to industry to receive the goods, and to consumers who have to buy them, as a result of increased driving hours, higher fuel bills and failed deliveries.

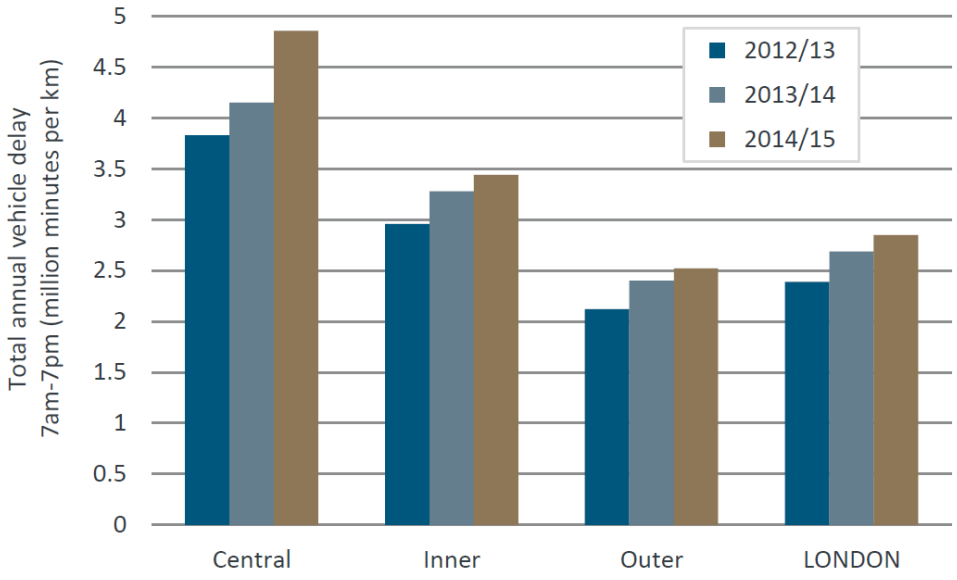
3.2 Each day in London the road network caters for over 6 million car/motorcycle trips, 2 million bus trips, nearly a quarter of a million taxi trips, over half a million cycle trips, and nearly six million walking trips. Added to this are freight and servicing trips which may not be able to be undertaken by other modes, as well as emergency services.

Figure 7 Total annual vehicle delays on the NOI* (million minutes/km), 2014/15



Source: total vehicle delay for London 2014-15,
*'The Network of Interest (NOI) = all 'M' and 'A' numbered roads plus busy minor roads and busy bus routes

Figure 8 Minutes lost to traffic delays across London – trend



Source: Total vehicle delay for London 2014 - 15, TfL

3.3 A core function of the street is for the movement of goods and people. But the street is a limited resource and tackling congestion now and ensuring the city can function effectively in the future requires managing the network so that those users who make the most efficient use of limited space are prioritised, whilst also ensuring essential use.

3.4 Car use, including taxis, is a particularly inefficient use of space. cars, taxis and Private Hire Vehicles (PHVs) take up nearly half of all the street space in central London, but account for just 13% of the distance travelled. In comparison, buses and coaches take up less than 10% of the street space but account for nearly 40% of distance travelled (MTS, 2018).

3.5 Data from TfL and the DfT also shows that the average occupancy of a private car and taxi in London is 1.5 people (Transport Statistics, DfT, 2017). The majority (60%) of all car driven trips in London are driver only, with a further 26% carrying just one passenger (Who Travels by Car in London, TfL/Roads Task Force, 2014). However, DfT data also shows that 91% of commuting trips in London are single occupancy (Dept for Transport Statistics 2016) – the highest of all car driven trips by journey purpose - and that commuting trips make up the highest proportion (25%) of all car driven journeys in London by journey purpose.

3.6 Car driven journeys are also relatively short: the majority of all London car trips are under 5km (3.5 miles): 33% are shorter than 2km (less than 1.5 miles) and 32% are between 2 and 5km (The Health Impacts of Cars, GLA, 2015). Data from the GLA on journey distance, purpose and ability of the driver, suggests that over 60% of car trips in London could be undertaken by other, more efficient, but also cleaner, modes. 73% of car driven trips could be walked, with nearly one third of them taking less than 10 minutes to walk. TfL estimates that over six million daily journeys currently made by motor vehicles in London could be walked or cycled. In Camden this translates to over 260,000 trips a day that could be switched.

3.7 On the other hand, the majority of residents' cars in London are not used most of the time. Evidence suggests that cars are parked 94% of the time (Zipcar, annual surveys) taking limited kerbspace space and impacting on traffic flow.

3.8 In addition to the costs that driving incurs through eg, pollution, congestion and inactivity, the cost of car ownership through vehicle tax, insurance, fuel, maintenance and parking costs adds up to approximately £3,500 a year. Zipcar's research found that the average Londoner spends just 182 hours in their car annually - less than half an hour per day - meaning it costs motorists an average of £18.88 per hour to use their car in the capital.

<u>The rise of Private Hire Vehicles</u>

3.9 The GLA report, London Stalling (2017), shows that there has been a significant increase in the use of two types of vehicle: delivery van traffic and Private Hire Vehicles (PHVs). Delivery vans are discussed in more detail in Sections 3.38-3.44 below (freight).

3.10 The rise of PHVs has also been identified as a cause for concern, driven by operators exploiting new technology which has enabled them to change the way they offer services and the way passengers book journeys. The number of

licensed PHVs increased 70% between March 2013 and November 2016, from 49,854 to 84,886.

3.11 A large proportion of PHVs come into Central London: between 2013 and 2016, the number of private hire vehicles entering the Congestion Charging zone (from which they are currently exempt) during the hours of operation increased by 54% to around 15,000 vehicles a day (London Stalling, GLA, 2015). This means they now make up 13% of all motorised traffic and approximately 40% of 'car' traffic in the zone. Outside of charging hours the figures can be even higher with up to 30,000 PHVs entering the zone Friday nights and Saturdays – an increase of over 90%.

3.12 The fact that only half of all vehicles in the zone are currently required to pay the full charge is partly explained by the presence of such a large volume of PHVs that are exempt. It may also go some way to explaining why congestion in the evenings and at weekends is as bad, or worse, than during the charging hours. However, many other categories of vehicles have become exempt, such as EVs.

3.13 The Mayor has recently consulted on a proposal to extend the congestion charge to PHVs, which Camden supports. However, it is Camden's view that, due to the proposed continued exemptions to the charge based Euro Standards to align with ULEZ, the impacts of any efforts to reduce PHV-related congestion will be very limited in the short-term.

3.14 Given that they make up such a large proportion of vehicle traffic, particularly car traffic, and offer an attractive convenient alternative to other modes, the continued provision of PHVs in Central London could also undermine both Camden's and the Mayor's ambition and targets to reduce vehicle kilometres driven in the borough, and to increase bus patronage and sustainable, active, healthy travel.

Taxis

3.15 Taxis are also a relatively inefficient mode of transport, comprising 20% of carriageway space in Central London but with a mode share of just 1% of all journeys (MTS, 2018, and Travel in London Report 11, 2019). Occupancy levels of taxis are also similar to those of private cars at 1.5 people for an average journey (Central London Rail Termini Report, TfL, 2011), which DfT data shows, is around three miles.

3.16 While Camden acknowledges that some taxi and rank provision is needed, particularly for people with a disability or carrying heavy luggage to/from stations, this is often overstated: people with a disability use taxis only slightly more than those without (Travel in London Report 9, TfL, 2015) and data shows that the proportion of onward trips made by taxi at rail termini is very low at about 1-2%.

3.17 Taxis also contribute disproportionately to emissions - up to 25% of particulate pollution in central London, and 10% of NO2. Engine idling, empty running and

taxis' safety records are all issues in Camden. From 1 January 2018, taxis presented for licensing for the first time will need to be Zero Emission Capable (ZEC). This means having CO2 emissions of no more than 50g/km and a minimum 30 mile zero tailpipe emission range. A first-time taxi vehicle licence will no longer be granted to a diesel taxi. ZEC taxis with petrol engines will need to meet the latest emissions standard (currently Euro 6).

3.18 However, older taxis will not have to meet these requirements. There are grants available for new ZEC taxis, and rapid EV charge points at taxi ranks are being rolled out, but diesel taxis are likely to continue to be a significant contributor to poor air quality along busy roads in Camden.

3.19 Camden has a particular problem with over-ranking outside the main rail stations at St Pancras and Kings Cross, contributing to congestion, traffic dominance and pollution in an area which is effectively a gateway for travellers coming to London both from the UK and overseas.

3.20 Together PHVs, taxis and car drivers take up 73% of road space in Central London, but carry only 22% of people travelling on the road (person/km). In contrast, buses provide a far more efficient mode of transport, taking up 16% of road space and accounting for 67% of people on Central London roads (person/km). On some Camden streets, such as Kilburn High Road, this difference is starker: 75% of the traffic flow is car/taxi/PHVs carrying just 25% of people, while just over 20% of the flow comprises buses carrying over 70% of people moving along this corridor (A5 Corridor Strategy, analysis, TfL, 2013). TfL's Walking and Cycling Potential reports (2017) also show that many taxi trips could be switched to walking or cycling: over 64% of taxi trips could be cycled, representing 154,000 trips a day, and providing 2% of all potentially cycleable trips. While the potential for walking trips is much lower, the report identifies 15% of taxi trips which could be made on foot, equating to 36,300 journeys a day. Together 80% of taxi journeys could be walked or cycled, although there may be some double counting with journeys being either walked or cycled.

Coaches

3.21 Coaches play an important role in London's transport system, offering an affordable and accessible mode of travel. The coach market is very segmented: it includes scheduled services running at pre-planned times on approved routes, and sometimes stopping en route using existing local London bus infrastructure. These services run both within the UK and between the UK and Europe, such as city to city links, airport and commuter services, with many running out of dedicated coach or transport hubs, such as Victoria Coach Station or Stratford Station in London. This also includes dedicated school buses as well as hop-on and hop-off tours.

3.22 Many scheduled coaches offer a local bus service outside the main bus network, i.e, they are considered public transport but are not secured by, or operate under,

agreement with London buses. Operators therefore need to apply to TfL for a London Service Permit (LSP), with the route, stopping points, and all documentation such as health and safety, vehicle, licence and driver details needing prior approval which also has to be renewed on a regular basis. Longer distance scheduled routes with multiple stops in London also require an LSP. All LSP applications are considered on a case-by-case basis against established GLA criteria. They are also subject to consultation among the affected boroughs, so borough officers can also assess whether the routes and stopping points conflict with their own transport objectives and plans.

3.23 Tourist and private hire coaches operate very differently. They are generally run by private operators and procured by private tour companies to fit the demands of the passengers, mainly offering bespoke tours to key attractions or visits to the theatre, as well as educational visits, and taking longer stay visitors to hotels at the beginning of their trips, and collecting them at the end of their stay as part of a comprehensive tour. These coaches, which represent approximately 40% of all coach movement in London, require drop off and pick up opportunities outside or in the vicinity of the attractions they visit, as well as longer-term parking between trips. Tourist coaches therefore place a much greater demand on the carriageway, particularly in Central London.

3.24 Camden experiences significant impacts from tourist coaches and they present a particular challenge in the West End and Bloomsbury which are frequented by tourists but they are also already very congested. These areas are also home to Camden residents who are significantly disadvantaged by congestion, pollution (including from engine idling), noise as well as other impacts on amenity, and bad driver behaviour is reported on a regular basis. Coaches also present a safety concern in areas of extremely high footfall, and obstruct traffic flow when they stop to pick up or drop off, particularly on narrower streets.

3.25 There is also significant evidence of coaches parking non-compliantly for long-term parking at inappropriate locations such as in highly residential streets and also on the footway where restrictions exist on the carriageway. Emissions, particularly engine idling has been highlighted as another problem. Camden has introduced powers to enforce engine idling across the borough.

3.26 Camden is home to several tourist attractions and leisure opportunities and the Council recognises that tourism is integral to the borough's economy and that coaches provide a more affordable and accessible travel option compared to other public transport modes. However, they can have a significant impact on the public highway, and affect residents and businesses which needs to be better managed. And, unlike scheduled services which require LSPs which can ultimately be withdrawn, neither authority has any additional powers beyond that for managing traffic generally. Compliance with any restrictions is therefore

voluntary and places an additional burden on the Council for on-street enforcement where there are problems.

3.27 It is predicted that tourism will grow, accompanied by an increased demand for coach use and an associated demand for limited public highway space – for routing, dropping off and picking up, and for parking. As with other motor traffic, unrestrained growth in coach operations in Central London is unsustainable and unfeasible, further impacting on congestion, pollution and safety. This is not in line with Camden's or the Mayor's transport policies for Healthy Streets, and will undermine London's attractiveness as a destination longer-term.

3.28 We therefore need to identify opportunities where tourist coaches, and indeed coaches generally, can contribute positively to our objectives and reduce vehicle dominance and mileage, without undermining the benefits of tourism, particularly in Central London where the impacts are most severe and where journeys could be undertaken by other modes. This includes, for example, consolidation of coach trips to key attractions in Central London, retiming, long-stay parking off the public highway such as at bus stations or indeed away from the city centre, and better use of technology to plan trips and reduce congestion. Camden will work with TfL, neighbouring boroughs and the tourist and coach industries to address concerns, including developing a new Coach Action Plan (TCAP) which to ensure it helps to deliver the Mayor's Healthy Streets outcomes.

Freight

3.29 People and businesses depend on goods and servicing. Without freight deliveries London's economy would grind to a halt within 24 hours. Delays and congestion cost the freight industry £2.1 billion annually – a cost which will ultimately be passed on to consumers through rising prices. But the movement of freight also incurs costs: freight traffic makes up approximately 30% of morning peak traffic in Central London, emitting 35% of NOx emissions and, proportionately, a higher involvement in collisions with cyclists that result in a fatality (TfL, draft Freight Action and Servicing Plan, 2018). Freight movement therefore must be accommodated but also its impacts on congestion (as well as emissions and road danger) minimised. Camden needs to balance this essential traffic with making the most efficient use of limited road capacity in a timely and safe way. Camden will develop a Freight Action Plan to identify mechanisms to support essential freight ensuring that it is efficient, safe, clean and contributes to delivering Healthy Streets.

Servicing and business deliveries

3.30 All businesses need deliveries and servicing: delivering stock both for retail and for offices, and collecting and removing waste are absolutely essential for businesses to function and thrive, and provide the goods and products that people need. An efficient road network is fundamental for ensuring that businesses are serviced in a timely way and that people can access the goods they need.

3.31 Businesses, working through partnerships such as Businesses Improvement Districts (BIDs), can make significant efficiency gains through consolidation. BIDs in Camden, such as in Hatton Garden, are currently investigating opportunities to consolidate waste collections both within the BID area but also in partnership with other BIDs across the borough. This will also help to significantly reduce heavy vehicle movements, create safer and more welcoming street environments for active travel, while also accruing financial savings to the businesses themselves.

3.32 Camden Council established the Freight Consolidation Service (FCS) in partnership with Islington as a trial in January 2014, to consolidate goods from multiple suppliers destined for Council buildings. The FCS receives orders from over 180 suppliers and delivers them to over 250 separate addresses in Central and North London. This pilot scheme operating from Edmonton resulted in a 46% reduction in the number of delivery trips to our sites, and a 45% reduction in the total distance travelled by delivery vehicles. There has also been a significant reduction in emissions: 41% in CO2, 51% in NOx and 61% of PMs (London Borough of Camden, 2017).

3.33 90% of freight is moved on the road network, with only 10% on rail and water. Using the Thames already removes 265,000 HGV movements a year but both water and the rail network have capacity to carry more. The Council offices' proximity to Regent's Canal offers the potential to consider freight movement on the canal, and this will be investigated as part of a retendering of the Council's contract along with getting more businesses in the wider Kings Cross area on board this initiative.

3.34 The Council also supports the use of 'micro-consolidation' in which 'last mile' deliveries are made by foot or cycle, including cargo bikes. These opportunities will be further investigated, and funding sought where possible, to support last mile or local delivery schemes by cargo bike.

3.35 Camden Market recently introduced a new scheme to use Regents Canal to consolidate and remove waste, in partnership with IRecycle Waste Management barges. This may present an opportunity for other businesses in the BID area (in Camden Town) to get involved. Camden will also work with other businesses along the canal, particularly in the growth areas around King's Cross, to investigate other opportunities to use the canal across a wider area. .

3.36 Camden will also investigate consolidation of deliveries among schools and other educational establishments, particularly in the Frognal and Fitzjohn's area as part of our UK Office of Low Emission Vehicles (OLEV) funded Neighbourhoods of the Future (NoF) project to deliver a Low Emission School Zone there to address air quality.

3.37 Camden also encourages consolidation for deliveries and servicing through the planning process and the Council is in the process of updating its guidance for developers for Delivery and Servicing Plans (DSPs). The new guidance will place greater emphasis on efficiency through both hard and soft measures such as coordination of deliveries with neighbouring sites, vehicle type, routing and delivery timing, and additional control measures such as FORS accreditation, as well as more and better monitoring to ensure the Plans' effectiveness. We are also currently investigating how to work with developers to consolidate construction activities, both servicing and materials, in areas of Camden where there is high impact, i.e., around areas of multiple construction sites.

3.38 Consolidation however requires sufficient space to receive goods, and there are very few opportunities in Central London. Moreover, we would not support multiple heavy vehicles entering Central London to reach a consolidation centre. Efforts to identify consolidation space therefore requires more effective partnership, including working with neighbouring boroughs to ensure that the benefits of locating centres in outer London are spread more widely. .

3.39 Retiming outside peak hours can also reduce congestion and help to improve road safety by reducing the potential for conflict with vulnerable road users. Camden has introduced retiming schedules into its schemes, for example in the West End Project (WEP) so that deliveries are made off-peak when they will have less impact on, and be impacted by, peak time journeys. This is an initiative we plan to roll out to other schemes, if feasible.

HGVs and Construction

3.40 HGVs make up a much smaller proportion of freight – just 4%, however the majority of this is construction related. Construction rates have also increased by 46% in the last five years, to provide homes and jobs to support the increase in population. Given London's growth, this trend is likely to continue with construction rates remaining high. As well as impacting on congestion, HGVs also present a major safety concern especially for vulnerable road users.

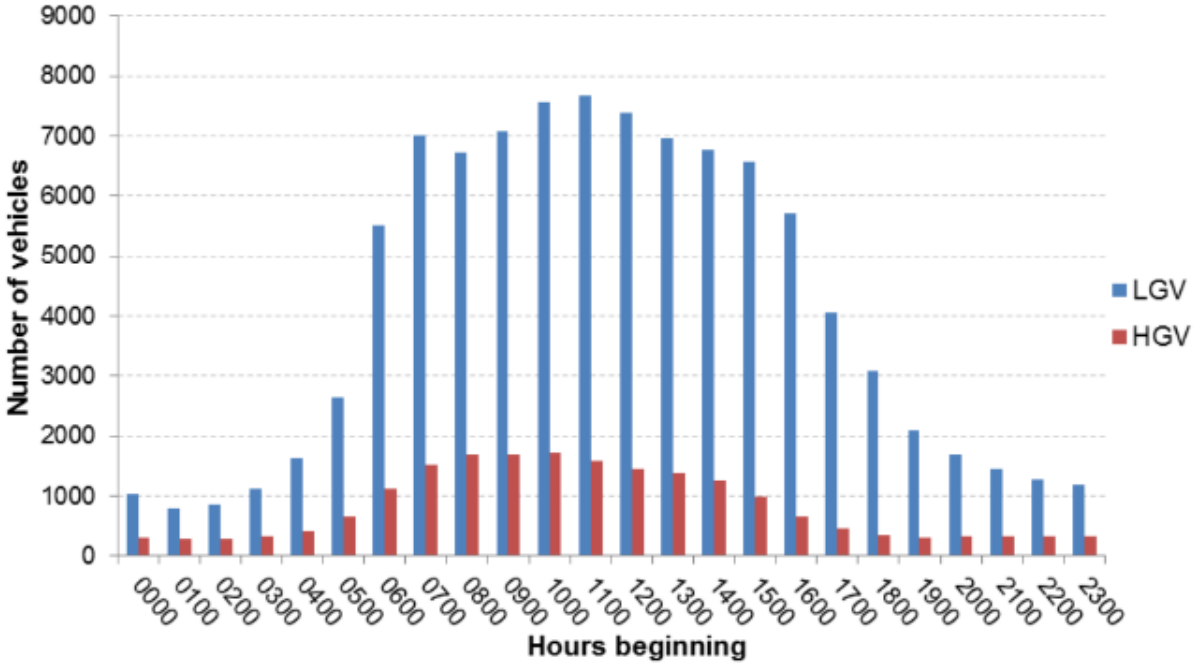
The rise of light goods vehicles and deliveries

3.41 Along with PHVs, the GLA also single out light goods vehicles (LGVs) as a cause for concern (London Stalling, GLA, 2017). In 2012, LGVs/vans drove 3.8 billion kilometres on London's roads; in 2015 this had increased to 4.2 billion kilometres, a rise of 11% and the fastest growing element of road traffic. Vans have been increasing in absolute terms and as a proportion of total traffic in London over recent years, making up 80% of commercial traffic in London, and over 26% of motorised traffic during the weekday morning peak. This is expected to grow a further 26% by 2041 (GLA, 2017).

3.42 Their highest use is in Inner London in the morning peak, rising sharply from 6am. Camden's own screenline data show a similar trend or LGVs for the borough. There are multiple reasons for this growth, including e-commerce and

immediate on-demand deliveries for a wide range of services such as food, as well as internet deliveries, but also a rise driven purely by economic growth and the accompanying demand for goods (The Implications of Internet Shopping Growth on the Van Fleet and Traffic Activity, RAC, 2017). Changes to company car taxation and vehicle excise duty have also made vans a cheaper alternative (White Van Cities, Urban Transport Group, 2018).

Figure 9 Light and heavy goods vehicle movements in the Congestion Charging Zone, 2015.



Source: TfL 2017

3.43 30–40% of deliveries to businesses in central London are personal deliveries from the growth in on-line shopping. This also increases the demand for kerb space: 60% of vehicle time on multi-stop parcel delivery rounds is spent parked at the kerbside (TfL, Freight meeting presentation, August 2018)

3.44 It is estimated that next day deliveries grew by 50% between 2012 and 2015; 46% of houses and 31% of flats receive online deliveries five times a week. This growth is forecast to continue as businesses move to same day deliveries to meet customer request, placing further demand on the highway and kerbside spaces (TfL presentation, 2018). This significantly reduces opportunities for consolidation: research in London has found that space inside vans is generally under-utilised, with 40% less than a quarter full as same day/next day deliveries result in more and more single destination (as well as 'failed') trips (White Van Cities, Urban Transport Group, 2018).

3.45 Whilst there are benefits for customers from new technology and business models which offer greater convenience, and deliveries/servicing is vital to the economy, some choices have also brought significant disadvantages in terms of congestion, emissions and pollution which affect a much wider population. The unfettered growth in both LGVs and PHVs requires investigation and solutions to manage it in the interests of all. This requires closer working with businesses to identify solutions, as well as consideration of regulation, incentives and disincentives, including through the planning and procurement processes to restrict single deliveries, whilst ensuring that customers receive their goods in a sustainable way.

3.46 The growth of these modes, particularly in Central London, also has impacts for Camden's LIP targets which require a reduction in vehicle km travelled in the borough.

3.47 Although PHVs and LGV internet deliveries have risen dramatically in recent years, the problems of congestion (and the associated issue of increased pollution), particularly in Central London, pre-date these trends. The rise of PHVs and LGVs should not distract from the fact that all vehicles contribute to congestion and therefore all drivers have a responsibility to reduce their mileage wherever possible. The Council's efforts to address congestion must therefore focus on all inessential or inefficient vehicle journeys regardless of the users.

Parking pressure, driving into the borough and through traffic

3.48 Demand for kerb space in the borough is under severe pressure: alongside general provision for loading/unloading on single yellow lines, Camden offers loading bays, resident parking, parking for blue badge holders, car clubs, electric vehicle charging points such as Source London, coaches, motor cycles, and short-term paid for parking. In addition kerb space is needed for Santander bike hire, bike parking and bike hangars. Camden also provides dedicated bays to businesses, traders, doctors, diplomats and resident blue badge holders, and kerb space is also needed for taxi ranks, bus stops and stands, and more recently rapid EV charging points. All these competing demands have to be managed while minimising the impact on the carriageway and the flow of traffic and on local amenity from noise and pollution.

Motor cycles

3.49 Variations in motor cycle and scooter size and models make it difficult to assess their impacts and there is little up-to-date research. It is often assumed that motor cycles are cleaner than cars or lorries, but evidence shows this is not the case. Although their contribution to levels of NOx in London and Camden is very low, as it is to PMs (less than 1%), this is more likely to be a result of the lower volumes of motor cyclists as a proportion of traffic flow, than having lower emissions – mode share for motor cyclists is around 2%. Some models emit higher levels of NOx than a car, comparable to a Euro 3 (or pre-1990) car. And

some of the most harmful pollutants from motor cycles are unregulated and therefore not included in pollution assessments. In practice, they release several hazardous compounds into the atmosphere, most of which are not restricted by legislation. Proportionately scooters in particular emit higher levels of carbon monoxide, hydrocarbons and NOx, (Platt et al, Nature Communications, 2014). Scientists have also found high levels of cancer-causing benzene and a family of toxic chemicals known as "reactive oxygen species" in the emissions (https://sustainability.uchicago.edu/about/news/ask_ignacio_motorcycles_or_cars). The exhaust systems are also less effective at removing pollutants than catalytic converters found in most modern cars. Moreover, these pollutants are at ground level which have a direct impact on health. Motor cyclists are also not considered 'active' healthy travel, and they contribute to traffic dominance as well as noise levels.

3.50 There are also frequent calls to allow motorcyclists in bus lanes, including from TfL, however the Council's view is that this would increase the risk to more vulnerable road users such as pedestrians and particularly cyclists who, in the absence of cycle lane protection on the majority (over 90%) of London's streets, rely on bus lanes as a buffer to the main flow of traffic. Allowing motor cyclists in bus lanes can create an intimidating environment for the modes that we wish to increase, for example through the constant filtering of undertaking and overtaking at speed, and in close proximity to cyclists. Both the Cycle Touring Club of Great Britain (CTC) and the London Cycle Campaign agree that allowing motorbikes in bus lanes would undermine benefits to cyclists: motor cycles would go faster, and intimidate less confident cyclists particularly.

3.51 While the data shows that trials of allowing motor cycles in bus lanes have not affected collision rates or resulted in a reduction in cycle use (Easy Rider, London Assembly, 2016), data shows that motor cycles are disproportionately involved in collisions with cyclists (Vision Zero Action Plan, TfL, 2018): motor cyclists are 1.56 times more likely to be involved in a KSI with a cyclist relative to their mode share.

3.52 They could be a major deterrent to further uptake of cycling, especially in the context of addressing the barriers to groups currently excluded. Evidence also shows that motor cycle speeds increase when they use bus lanes (sometimes by as much 10mph with a higher percentage breaking the speed limit (Motor Cycles in Bus Lanes, TRL, 2011) and speed is a major factor in KSI casualties. Indeed the MTS notes that addressing speed is the overriding concern for achieving Vision Zero. Camden therefore has concerns about implementing measures that would undermine our ambitious target to increase the levels of cycling in the borough and increase road risk.

Parking and economic viability

3.53 There is often a widely-held view among businesses that their livelihoods are dependent on people driving, but evidence shows that they consistently overestimate the share of their customers coming by car - in some cases, this is by a factor of as much as 400% (The Relevance of Parking in the Success of Urban Centres, A review for London Councils, Sophie Tyler, Giles Semper, Peter Guest & Ben Fieldhouse, 2012). In London, as well as other cities, up to 80% of shoppers go to town centres by modes other than a car: walking is the most important mode for accessing local town centres while public transport is the most important mode for travel to international centres, such as Oxford Street. (Town Centre Study, TfL, 2011). Retailers also underestimate how far pedestrians have travelled to get to the high street: over 60% lived within 1 mile, possibly explaining the greater proportion that walked, and pedestrians generally visited more shops than those arriving by car.

3.54 The proportion of people driving to local shops in Camden is likely to be lower. Most local high streets, such as Kilburn High Road, Camden Town, Marchmont Street, Hampstead High Street and West End Lane, all serve communities who live in the local area, within easy walking and cycling distance or by bus. Car ownership is also low in many areas: the majority of households do not have access to a car, and car ownership has been decreasing more generally across the borough in recent years (Travel in London Reports, TfL).

3.55 Contrary to most businesses' perception, there is evidence that pedestrians, cyclists and those arriving on bus are more lucrative to traders than car drivers – they spend more money and visit more often. Yet, TfL's Town Centre study shows that retailers also overestimate how much people spend based on their mode of travel, with people arriving by car spending more. Evidence shows that people who walk to high streets spend an average 40% more over a month than those who drive, as do those who go by public transport (The Pedestrian Pound – the business case for better streets and places, Living Streets, 2015). And in the case of one local town centre in London, car drivers represented the highest percentage of those who spent nothing and the lowest percentage of spend over £100 (Town Centre Study, TfL, 2011).

3.56 For all types of town centre, in terms of frequency of visit, those who walk are the most likely to visit five days or more (50%), followed by cyclists (37% visit five days a week or more). 27% of bus users visit five days a week or more, with car users being the least likely to do so at only 14% (TfL, Town Centre Study, 2011).

3.57 Shoppers themselves consider parking less important to successful shops than shop-owners think. People choose where to shop based on the range and quality of shops and the offer, and the atmosphere of the place (Parking and Town Centres, Position Paper 2, British Parking Forum, 2006), including less traffic and congestion (TfL, Town Centre Study, 2011, and Mini Holland update Report, Waltham Forest, 2018).

Case study - Lea Bridge Road in Waltham Forest

3.58 Surveys undertaken among businesses on Lea Bridge Road as part of the Mini Holland project in Waltham Forest provide an important insight into shopping habits and perceptions. Businesses believed that 63% of their customers came by car, compared to 20% who did, that 40% walked compared to 64%, and that 41% came by public transport compared to 54%. The top four things that businesses thought would improve things for their customers was better (more) parking (57%), better located parking (43%), better crossings (22%) and less traffic (20%). On the other hand, the top four things that visitors thought would improve Lea Bridge Road were better crossings (32%), less traffic (31%), protected cycle lanes (24%) and pedestrian signage (21%).

3.59 Research shows that there is no (direct) relationship between the turnover of shops, the transport mode used by customers and the amount of parking spaces provided, and no evidence that the most successful shopping centres are those with the most, or cheapest parking availability. While parking may play a role it is not the main factor. Research from the EU funded Push and Pull project concludes that the removal of parking will not kill shops or the High Street (Push and Pull, Good Reasons for Parking Management, report from the EU funded project Push & Pull, 2015). Rather, case studies show that effective parking policy and traffic restrictions, and the consequent reduction in traffic volumes, can increase the attractiveness of a shopping street, leading to more visitors, encouraging them to dwell and increase their spend (P&P, 2015, and Living Streets, 2015).

3.60 Moreover, adding bicycle facilities, such as bike parking and cycle lanes can actually increase economic activity, and also help create a buffer from moving traffic that aids pedestrians and cyclists alike (Town Centre Study, TfL, 2011). Cycle parking delivers five times higher retail spend than the same area of car parking (The Value of Cycling, University of Birmingham, DfT, and Phil Jones Associates, March 2016) and a compact town optimised for walking and cycling can have a “retail density” (spend per square metre) 2.5 times higher than a typical urban centre (Phil Jones Associates). The economic importance of a high quality environment, particularly for pedestrians, is also discussed in Section 8 (Growth) which explains that it is a pre-requisite for attracting investment from land owners and developers, and Section 10 (Summary) which shows that investment in the walking and cycling environment offers significant value for money.

3.61 Camden’s borough-wide car-free policy for new developments which is included in the Council’s new Local Plan (2017) will help to minimise car ownership and use among residents and businesses in the future. Yet over 20,000 people drive into Camden for work every day, although most of this is likely to be on-site (off-street) parking due to CPZ hours currently operating in the borough. To help manage current commuting levels and on-site parking, boroughs can develop a Workplace Parking Levy (WPL). A WPL is an annual fee charged to employers by the local authority for on-site spaces used for employee parking which effectively enable free parking. Employers can choose to pass on this charge to employees. Such a charge can help to discourage employers from providing on-site parking, and employees who will pay the charge from commuting by car which contributes to congestion and pollution. Funding secured through a WPL

has to be used for transport initiatives. The Mayor supports and encourages boroughs to develop such a scheme through the MTS and the London Plan.

3.62 However, even new car-free developments generate trips from visitors who can drive in and park outside the CPZ hours of control. Land use changes in some locations, especially where regeneration is taking place, is also encouraging a growth in visitors arriving by car, for example to Kilburn for the emerging night-time economy there, and to the new retail and leisure offer at King's Cross, even if residents do not own a car. And there is anecdotal evidence in Camden that some residents themselves can circumvent the car –free status by driving away during the hours of control, leaving before they start in the morning, and returning after hours later in the day. This may particularly be the case in areas of the Borough with short (2 hours) controlled periods.

3.63 Reviewing both the size and the hours of operation in CPZs along with other measures such as charging mechanisms to disincentivise vehicle ownership use are therefore necessary to minimise driven visitor trips and to ensure that Camden's car-free policy is effective and delivers the intended objectives.

3.64 People coming into the borough by car also results in traffic 'rat-running' on residential streets; this together with the school run in some parts of the borough, has been raised by residents as a major issue. However, it is challenging to restrict these movements without affecting residents' access, or contributing to displacement on parallel streets. Nevertheless, Camden will investigate opportunities to restrict traffic travelling in the borough wherever possible.

3.65 Through traffic coming from, and going into, neighbouring boroughs is also an issue. But as with journeys made within the borough, restricting these movements is complex requiring a partnership approach with neighbouring boroughs as well as TfL to address traffic across a wider area as well as at specific locations, including boundary roads.

4.0 Personal safety: crime and anti-social behaviour

4.1 Crime, anti-social behaviour and the perception of personal security are also barriers to travelling, both on the street and on public transport. Crime remains an issue in the borough, although crime rates have reduced since 2012. Street-based crime and anti-social behaviour in Camden is strongly linked to the night time economies, particularly in Camden Town and the West End which is often alcohol-related (London Borough of Camden, 2017). The whole of Camden is a Controlled Drinking Zone (CDZ) which means that it is an offence to drink alcohol in any public place after being asked not to do so by a police officer or police community support officer. Dispersing large numbers of people when they leave venues is therefore a key issue. Night bus provision in Camden Town has increased significantly in the last few years (particularly route 29/N29), and weekend, night-time underground services will also offer more transport options to help take people away promptly from hot-spot locations.

4.2 The rise of terrorism and moped crime present a new set of challenges which must be addressed, with the rise of motor cycle crime a particular concern in Camden – both the theft of motor-cycles and motor-cycle enabled crime.

4.3 There is also the issue of hate crime, particularly in a very multi-cultural borough like Camden, although hate crime reports in the borough have decreased by 35% over the past four years (to 2017). Responses to a survey undertaken in 2017 indicate that hate crime is motivated by hostility or prejudice based on a personal characteristic, such as race, religion, sexual orientation, disability or gender identity, and most residents who identified themselves as having certain personal characteristics had experienced a hate crime in their lives (London Borough of Camden, 2018). Personal safety is therefore a significant issue for these groups who are also protected groups under equalities legislation.

4.4 As well as street-based crime, there are also anti-social issues and public order offences on the public transport network. Reports from TfL show that crime on the networks decreased during 2016/17 by over 6% over the previous year, and the overall levels remain low, although for Camden there was an increase in bus related crime and the borough remains a hotspot. Nevertheless, public transport in London continues to be a relatively safe and low crime environment, with very few of the 10 million passengers using public transport each day ever experiencing or witnessing crime. For these reasons TfL and its transport policing partners remain focussed on those networks and crime types that have seen an increase, such as low level violence, pushing and shoving, verbal disputes and threatening behaviour at commuter times when services are at peak capacity. However, violence and serious public order offences remain a challenge.

4.5 Camden will work with TfL, crime agencies, police and Community Safety officers to identify opportunities to design out crime in the street environment. However, solutions to address crime and anti-social behaviour need to balance preventing criminal activity with ensuring that the street remains inclusive and accessible to everyone, and continues to deliver the Healthy Streets outcome.

5.0 Public transport overcrowding

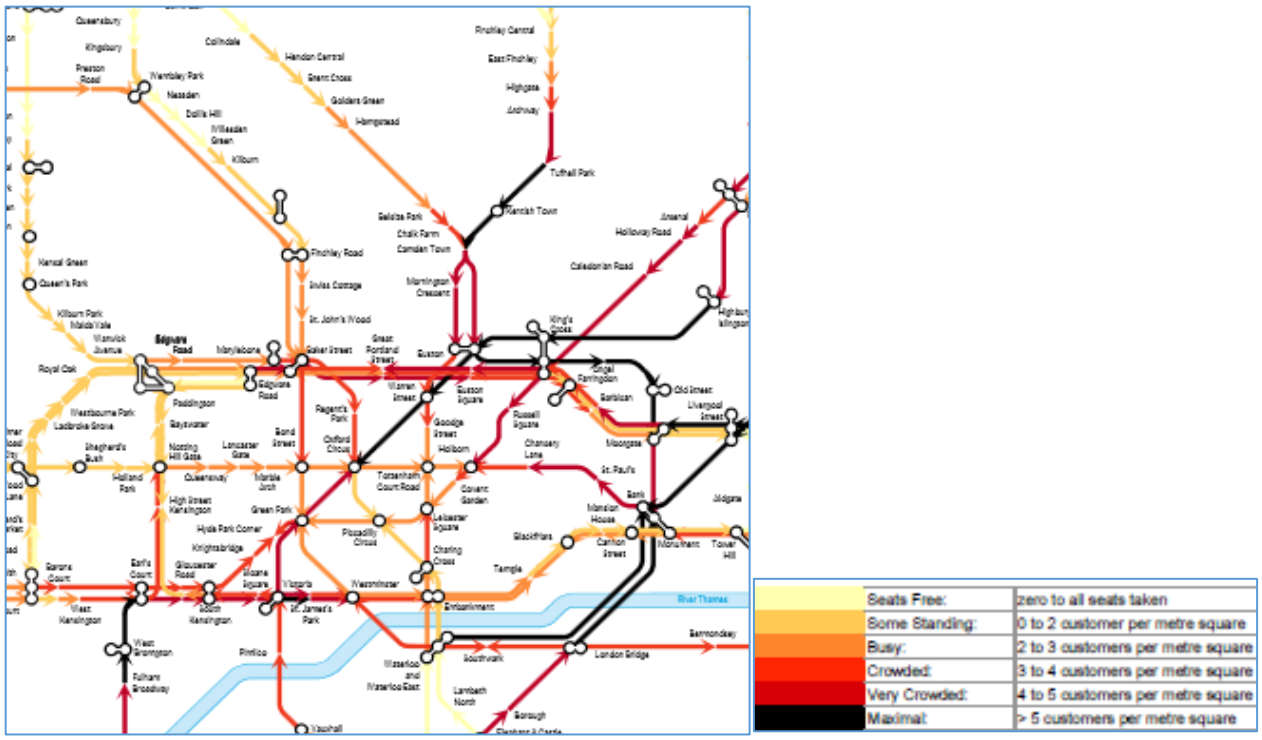
5.1 A significant proportion of trips (approximately 40%) made by Camden residents are on public transport – rail, underground/DLR and buses (London Travel Demand Survey 2016). Buses are the most accessible form of transport and are relied on by older people and those with disability: However, due to delays and overcrowding, the passenger experience is often unpleasant, and bus journeys have become more unreliable. This may deter people from using the services especially those who have greatest need.

5.2 Even with excellent public transport many underground and rail lines are seriously overcrowded. Some sections of the Victoria, Central and Northern Lines through Camden are three of the five most overcrowded sections in peak directions of anywhere on the Tube network. Camden therefore supports the Mayor's proposals to increase capacity, for example extending the Bakerloo and Northern lines, increasing train frequencies, and other rail projects such as Crossrail 2 and the proposed West London orbital rail link.

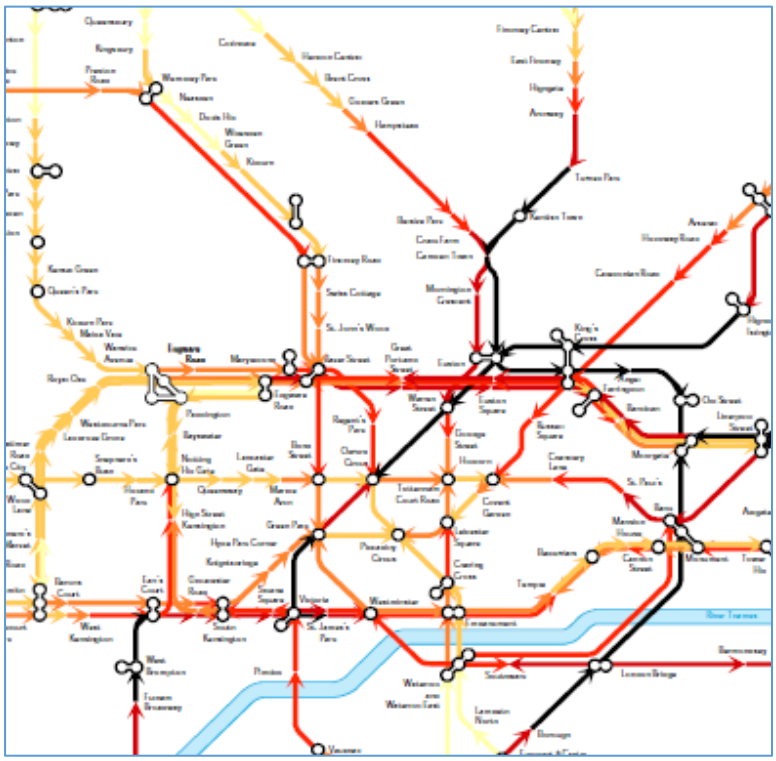
5.3 Planned upgrades at Camden Town and Holborn underground stations offer an opportunity in Camden to help alleviate overcrowding, but even with significant investment and planned improvements, overcrowding in Central London will continue (Figure 10 below), mainly due to population growth with demand outpacing supply. Without further action over 71% of travel on the underground will be severely crowded by 2041 (Mayor's Transport Strategy (MTS, March 2018), increasing by 50% on the underground, and 90% on national rail services (see Figures 9 below). This will also increase crowding at stations as more people enter and exit, particularly during the peak travel periods. Camden will be affected particularly south of Kentish Town.

Figure 10 Predicted public transport overcrowding 2021 and 2031

2021 weekday am peak hour



2031 weekday am peak hour



Source: TfL, Overcrowding history 2018

5.4 Reducing overcrowding is essential if the public transport system is to keep pace with growth and support economic development. But there are limits to providing capacity improvements: as well as taking considerable time and causing interim disruption, the infrastructure is extremely costly while available funding is a major constraint. Shifting journeys from public transport to walking and cycling has to be part of the mix to free up space as demand for services increases. And there is significant potential to do so.

5.5 TfL's reports on Walking Potential and Cycling Potential (TfL 2017) analyses trips that could be switched, based on several criteria, including age, disability, trip length, encumbrance (carrying loads), time of day, and trip 'chaining' – where the journey is part of a longer journey that could not be switched. The reports estimate that over 5 million daily journeys currently taken by public transport in London could be made on foot (over 1 million journeys) or by bike (over 3.5 million journeys). Indeed, an average of 36% of all trips made by mechanised modes (vehicles and public transport) which could be walked or cycled could come from public transport (33% for walking and 40% for cycling). The greatest potential to increase both walking and cycling in the borough is a switch from public transport. Buses particularly comprise the second greatest potential for cycling trips – nearly 30% of potential cycle trips could come from buses, freeing up space for those who most rely on them such as older people and those with a disability, and for whom overcrowding is a barrier to use.

5.6 Of all the potential 430,000 cycle trips a day that could be made in Camden, over 300,000 (70%) are currently made using public transport; in Camden the potential to increase cycling from public transport is three times that from private car journeys which could be switched. A further 180,000 (approx.) journey 'stages' a day could be made by bike, ie parts of a longer journey which could not be walked or cycled in its entirety. Camden is one of three boroughs (including Westminster and Lambeth) with the highest cycling potential from journey stages, which in Central London will be from the underground. This takes the total cycle potential in Camden to over 600,000 trips a day – one of the highest in London for overall cycling potential (including Westminster and Lambeth), 400,000 of which are currently made on public transport.

5.7 The greatest potential to switch to walking is in Outer London, and from car journeys (Analysis of Walking Potential, TfL presentation to Central Sub-Regional Partnership, June 2017) – 46% as a driver and 22% as a passenger. Opportunities to switch in Central London are much lower: only 4% of walkable trips for the entire journey involve travel in Central London. However, similar to cycling, the greatest potential for walking in Central London comes from public transport and from walkable 'stages' – with 59% coming from bus and 26% from underground (TfL, 2017).

5.8 Of the 175,000 potential walkable trips that could be made in Camden (both origin and destination) 75% could come off public transport – with 60,000 each from bus and underground (Walking Potential Analysis, presentation, TfL, 2017). But unlike cycling potential, there is an equal distribution of potential for fully walked trips and walkable stages.

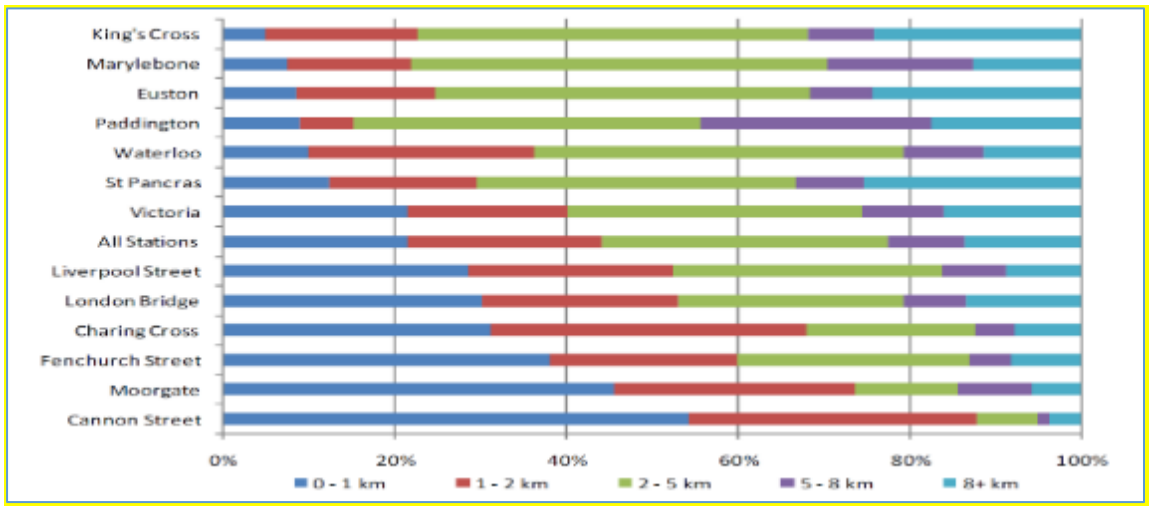
5.9 Switching journeys from public transport applies equally to Camden residents as it does for visitors. 39% of residents make journeys using public transport (London Travel Demand Survey No 10, TfL, 2018), a significant proportion of which are under 5km - 40% of bus trips, 24% of underground trips and 5% of rail trips. Many of these could comfortably be converted to active travel modes. Based on this data, it is estimated that over 73,000 public transport journeys a day could be cycled: 38,000 switched from bus, 33,000 from underground and 2,500 from rail.

5.10 Many of these public transport journeys will be for commuting purposes, with many using Camden's rail stations of Euston, King's Cross and St Pancras. But shopping and leisure trips to town centres also offer opportunities to switch: 32,000 trips could be made to Camden Town alone.

5.11 Passengers travelling to and from the rail termini during the peak periods make more than 400,000 Underground journeys and over 100,000 bus journeys in

central London (Central London Rail Termini Surveys, 2010, TfL). This is a significant part of London's public transport system with some stations or services suffering from severe crowding problems. Yet the majority of onward journeys from rail termini, including in Camden, are under 5km (see Figures 11 and 12 below). 87% of onward bus journeys made at Central Rail termini are between 1 and 5 kilometres, and 68% of underground journeys are between 2 and 5 kilometres. Analysis of travel patterns at Central London rail termini identified 123,200 potentially walkable journeys (less than 2km), and a further 255,000 journeys to and from central London rail termini that could feasibly be cycled (up to 5km). Together these make up over 60% of onward journeys made on public transport (Central London Rail Termini Surveys, 2010, TfL).

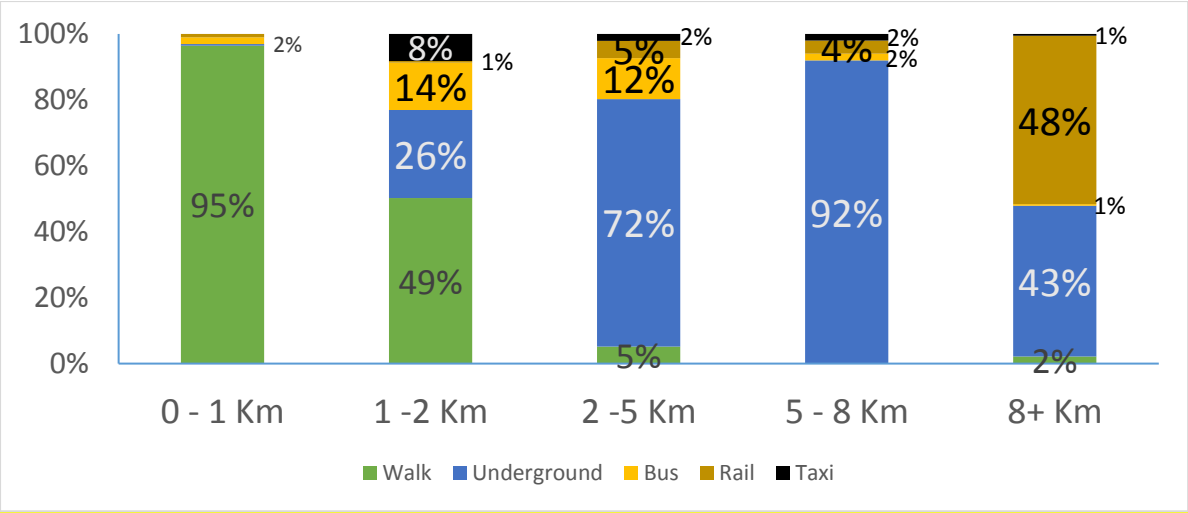
Figure 11 Distance travelled for onward journeys by station



Source: Central London Rail Termini Surveys 2010, TfL

5.12 Data similarly shows that a large proportion of journeys made from rail termini in Camden are between 1- 2km and are made by bus or underground. In the case of St Pancras and Euston stations (as examples), this is approximately 40% of all journeys up to 2km (Central London Rail Termini Surveys, 2010, TfL).

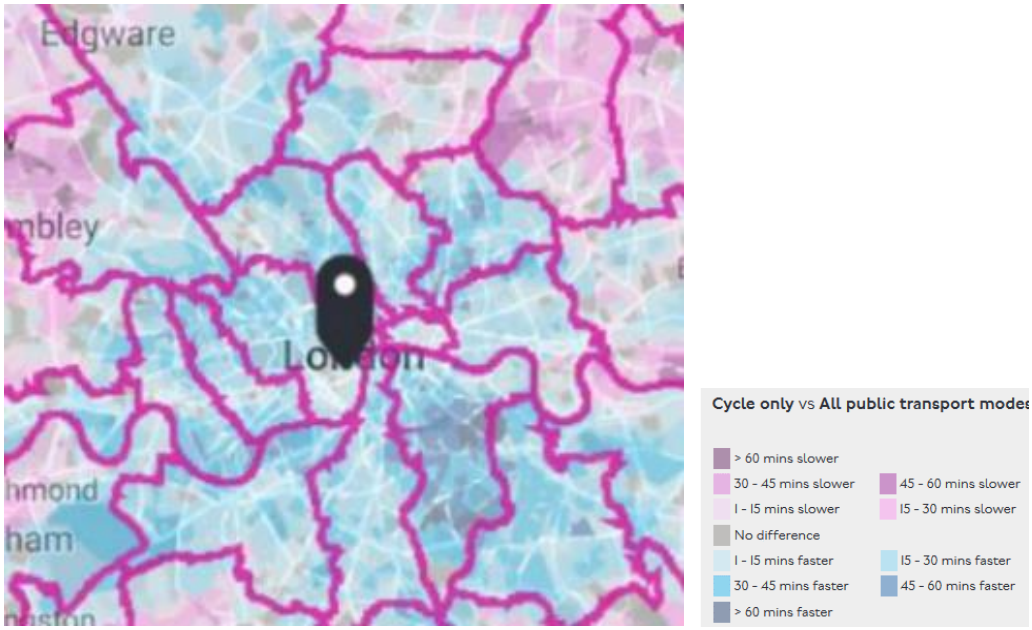
Figure 12 St Pancras station – an example of onward journeys in Camden by distance bands



Source: Central London Rail Termini Surveys 2010, TfL

5.13 95% of journeys that could be cycled were between 1km and 4km, with journey times typically being the same as by mechanised modes, the majority of which are currently being taken by underground (70%). This offers time and financial savings and reliability benefits, and effectively, this means it is faster and cheaper to make a journey by bike than by public transport (Figure 13 below) both in Camden and more widely in Central London.

Figure 13 Comparison of journey times by bike and by public transport (TfL)



5.14 Many onward journeys from Central London rail termini are already being made by cycle hire - docking stations at both Waterloo and Kings Cross stations have the highest use in London. After the three cycle docking stations at Waterloo

station (combined), the one on Belgrove Road, at Kings Cross, consistently receives the most hires in London – 7,494 in January 2018. Camden has 67 cycle hire docking stations with 53,211 docking members, the second highest after Westminster (monthly cycle hire data updates, TfL).

5.15 Cycle hire offers an excellent opportunity for commuters to make onward journeys from stations by bike, helping to reduce public transport overcrowding. But there is significant scope for further improvement. Increasing cycle hire provision, including dockless cycles, along with high quality cycle infrastructure around stations could make a significant contribution towards reducing transport overcrowding and improving the public transport experience for passengers. The Council can also encourage developers to include promotion of cycle hire through, for example, subsidised staff membership, as part of their Travel Plans secured through the planning process.

5.16 It may also be the case that people are unaware of the distances between stations on the underground, and that the time taken to interchange between different tube lines underground may exceed walking times at surface level. This information is available and with better communications and street-level facilities could also help to convert more trips (Figure 14).

Figure 14 Walking times between stations in Camden

Source: Tfl

5.17 Camden's excellent public transport provision also presents significant safety challenges, particularly around King's Cross: the main rail stations at Euston and King's Cross stations were in the top 10 busiest stations in the country in 2015, with 43 million annual arrivals and nearly 31.5 million annual exits (Department for Transport, 2015). Half of all arrivals occur during the morning peak: 60,000 people arrive on an average weekday morning peak (3 hours) at the two stations combined (DfT). A further 95 million annual arrivals and exits occur at Kings Cross/St Pancras underground station (2016), the second busiest and the most connected underground station in London.

5.18 Ensuring the safe and efficient movement and dispersal of such large volumes of people in a constrained space adjacent to one of London's most heavily trafficked corridors on Euston Road, is a major concern for the borough, especially during peak travel times. Camden is working with TfL to improve the area, particularly for pedestrians.

5.19 More and better use of London's waterways should also be part of the solution. At a strategic level, investment in jobs needs to move away from the centre of London with improved rail capacity (such as Crossrail and Crossrail 2) opening up and providing access to new Opportunity Areas away from Central London.

6.0 Accessibility and inclusion

6.1 Transport plays a vital role in ensuring equal life opportunities for all Londoners. People rely on the transport network to access jobs and opportunities, goods and services and take a full and active part in community life. This applies to people across all ages, abilities, backgrounds and walks of life. People's ability to access the transport network, however, varies, and the health benefits that can be gained from more active travel are not equally distributed. For example, some may be fearful of walking or cycling, particularly at certain times of the day; others may face physical obstacles both on the street and when using public transport. And lack of information, or appropriate communication, can confuse people or stop them making journeys. Problems with accessing the transport network can limit the choices people have, the opportunities available to them and result in isolation, loneliness, reduced social cohesion, and a deteriorating quality of life.

6.2 Moreover 'disability' refers not only to the commonly-held but unspoken assumption of "mobility impaired" or even "wheelchair user, but also a range of other disabilities including sensory needs, learning disabled, and autism, and the needs of their carers.

6.3 Ensuring that everyone can access the transport network underpins Camden's commitment to delivering the borough's corporate objectives outlined in Our

Camden Plan: to reduce inequality and improve the health and well-being of its population, where everyone has a chance to succeed, and everyone can lead happy, healthy and fulfilling lives. The ability to get around the borough with ease, and access private and public spaces in Camden is integral to creating a place where no-one is left behind (Camden 2025, London Borough of Camden).

6.4 If transport is to make a positive contribution to Camden's vision, it is important to understand the diverse needs of Camden's population and address the barriers that constrain people's choices when using the transport network to ensure that it is more inclusive. These barriers are discussed in this section as well as in the Summary.

6.5 It is also important to acknowledge that many people belong to different groups, particularly 'protected' groups under equalities legislation, and there are strong links between them. This means that the needs of different groups of people should not be considered in isolation. For example, a majority of older people in London will be in low-income households (65%) as will those with a disability (69%) (Travel in London Report 9, TfL, 2016), and a large proportion of those with a disability will be older people. Meanwhile 47% of minority ethnic groups will be younger people, but also BME groups are strongly linked to deprivation.

6.6 All 'protected' groups tend to make fewer trips than the average population (TfL Planning) and they tend to be local. Walking is the most frequent mode, with bus use second. They are less likely to drive, cycle or use the Underground. People on lower incomes will also walk the furthest, as will those categorised as 'white'. However, there are differences within groups: women make more trips than men including escorting trips; older people walk and catch the bus more than the average population, and bus use is particularly high among black people.

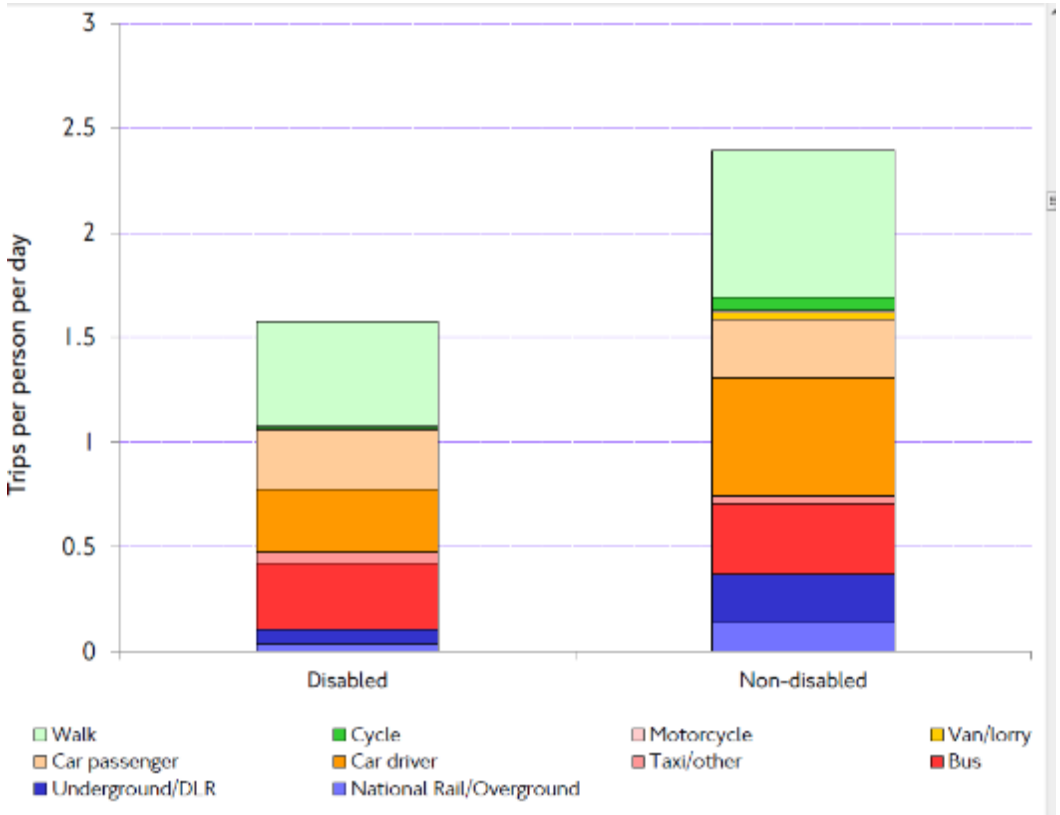
6.7 Those without access to a car walk the furthest compared to those with, with the distances decreasing significantly with multiple-car ownership. Those without access to a car also make significantly more trips than those with a car, which similarly decreases with multiple car ownership.

Physical, mental and sensory disabilities

6.8 Transport is essential for people with a physical, mental or sensory disability to enable them to live independent lives. People with disability impairments are not homogenous. There are specific issues faced by specific groups, for example manual wheelchair users need sufficient space to move around and turn, and the height of push buttons on traffic signals needs to take account of their reach. Visually impaired people need a good level of lighting and, if information such as a train or bus timetable is displayed, a print size that they can read easily. People with mobility impairments as well as much older people are also restricted by the distance they can walk.

6.9 It is often assumed that people with a disability are more reliant on cars, including taxis, but this is not the case. Walking and bus use are the modes most frequently used by people with a disability (as well as older people) in London (data specific to Camden is not available): the main mode is walking which comprises 31% of trips, which equals that of people without a disability. The second most used form of travel is bus/tram at 22%, which is much higher than those without a disability (14%). 19% of trips are driven, also lower than the average for people without a disability (23%) and only 3% are made by taxi (Travel in London Report 9, TfL, 2016, Figure 15 below).

Figure 15 Trip rates by main mode for abled people and people with a disability (average day, 7 days a week) 2015-16



Source: London Travel Demand Survey, TfL

6.10 Seating is therefore an issue that is very important for people with a disability (and older people). Many may find it difficult to stand and appropriately placed seating, including where people may have to wait such as at bus stops, as well as on High Streets and shopping streets, and for respite en route as part of longer journeys is vital. Seating also offers the opportunity for people to sit and talk and engage with one another, offering additional social and mental health benefits.

The lack of seating has been also been highlighted in our workshops as an issue which prevents people from going out.

6.11 Bus use is also very high among people with a disability - buses are the most accessible form of transport. We do not have specific data for Camden, but for Londoners generally, the most common barrier to using buses for protected groups under the Equalities Act (2010) is overcrowding, with Minority Ethnic Groups (BAME), younger people and women the affected (Understanding the Travel Needs of London's Diverse Communities, TfL, 2014). This has been discussed in Section 5. TfL research shows that the main barriers that Londoners with a disability experience and which have an impact upon their ability to make public transport journeys as often as they would like are often the same as those expressed by non-disabled Londoners, namely overcrowding and concerns about the antisocial behaviour of other customers (discussed in Section 5 (public transport overcrowding, and Section 4, Crime and Anti-Social Behaviour). Customers with disability also see accessibility related issues, cost and comfort as barriers to travel on public transport.

6.12 Camden's stakeholder engagement events indicate the same concern among our residents: older people and those with physical and mental disabilities are more reliant on public transport than other groups, particularly buses. Yet overcrowding can prevent those most in need from using the network: along with insufficient space to move, or a place to sit, and dense crowds can create severe anxiety among already vulnerable people. Addressing the concerns of older people and those with a disability therefore need to focus on walking and public transport.

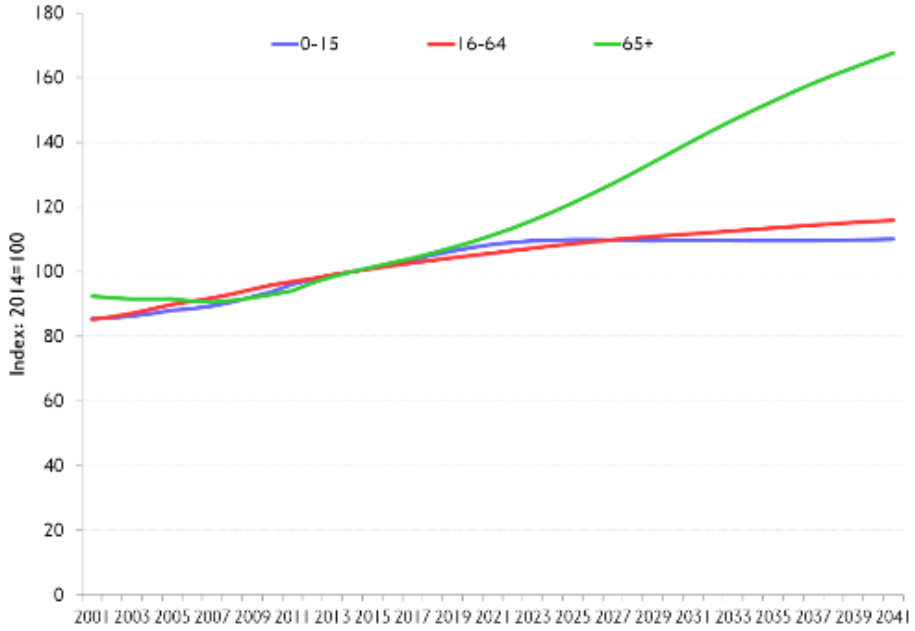
6.13 Floating bus stops – where bus passengers have to cross a cycle lane to reach the stop – are also an issue. Older people and those with a disability have asked for zebra crossings across the cycle lane so that cyclists will stop. We will need to be particularly careful when designing bus stop passes to ensure the needs of older people and those with a disability are taken into account.

Older people and children

6.14 Understanding the needs of older people is also integral to inclusivity, particularly in the context of an aging population, and many of the issues affecting those with a disability, discussed in the preceding Sections, may also apply to much older people.

6.15 Camden currently has 33,000 residents above the age of 65. This will increase by 25% by 2025 (Figure 16 shows that the proportion of people over the age of 65 years will increase sharply in the coming years).

Figure 16 Population trends to 2041, age in years



Source: TfL, 2014

6.16 Camden has had a long standing relationship with Kilburn Older Voices Exchange (KOVE), a resident group that investigates barriers to the street environment for older people and those with an impairment. This work will become more important in the context of an aging population and KOVE representatives have offered to provide contact details of other older people's groups to improve engagement. We have also met with Age UK and Ageing Better in Camden to seek the views of older people (discussed in Appendix F, Engagement and Consultation).

6.17 Although older people (and those with a disability) tend to make fewer trips they make the most of their trips on foot and by public transport, particularly buses which are the most accessible form of transport. Older people comprise the largest proportion of people by far who make the first half kilometre of any journey of foot (Travel in London Report 9, TfL, 2016). However, they generally do not make many longer journeys. This suggests that they keep to within a smaller radius of their homes. Other age groups who make a lot more longer journeys, will therefore rely more on other forms of transport.

6.18 Providing a high quality, accessible walking environment, as well as improving accessibility to the public transport network are key considerations for enabling older to travel and use streets. Fear of traffic, both volume and speed, is a major deterrent to older people using their streets. They are particularly reliant on formal crossing points and having sufficient time to cross. The installation of Countdown at formal crossing points in Camden has therefore been welcomed by groups representing older people. However, older people have also told us

that, even with Countdown, crossing times are insufficient to cross safely at many locations, including on Upper Woburn Place and on Kilburn High Road.

6.19 As discussed above, places to sit and rest are also extremely important, enabling more journeys to be made on foot to access essential services, goods and social networks. This in turn increases opportunities for physical activity and reducing social isolation. The Council often receives objections to public seating from people concerned about anti-social behaviour. However, it should be acknowledged that public seating is not the *cause* of anti-social behaviour and that addressing its root causes should be our priority in the interests of supporting older people's accessibility and our wider objectives for reducing inequality and improving inclusivity.

6.20 Seating at bus stops is also an issue – both the provision of seating as well making existing seating more comfortable. Implementing seating and covered shelters at bus stops however is complex: in many cases the footway widths are not sufficient to accommodate a seating area, or the substructure cannot take the weight, for example on West End Lane bridge in West Hampstead. And bus announcements for people with a visual impairment is also important.

6.21 KOVE has also highlighted the importance of public toilets for older people, although delivering these is more difficult due to the space and infrastructure requirements. However, they point to the opportunity to install them at stations wherever possible.

6.22 .Children use streets in different ways to adults – to explore and informally learn, as well as interact socially with others, as older people do, as well as for journeys. Yet they are often excluded from public space or their views are not considered. Children and younger people are also affected negatively by traffic volumes, speeds and severance. In 1971, 80% of seven- and eight-year-olds walked to school, whereas today in Camden an average of 32% do. Many children are also prevented from playing outdoors: 71% of children played out on their street every day in the 1970s compared to only 21% of children today (Play England).

School journeys

6.23 Camden manages a School Travel Plan programme to encourage more sustainable travel on the journey to school. Data from our STARS programme show that an average of 34% of children walk to school, 8.5% scoot and 2.5% cycle; 36% are driven. Moreover, there has been an average 6% decrease in driven trips and a corresponding increase in trips walked, cycled or scooted over the three years 2014/15 to 2016/17.

6.24 However, Camden has a particular issue with journeys made on the school run to independent schools which bring children from further afield, including from

outside the borough. Driven trips to independent schools is much higher, at 48%, with impacts for air quality, road safety and physical inactivity. In many cases, the proportion of children being driven to school has increased over time.

6.25 The biggest impact is in the Frognal/Fitzjohn's area of Camden where there are 23 independent schools in close proximity and where local residents have raised concerns about traffic and air quality. Officers are also progressing a Low Emission School Zone in the area using a combination of EVCP infrastructure as well as traffic restrictions, together with a road safety project to help address these issues. Camden's planning policies also seek to minimise the development of new schools or expansion to limit further impacts.

Cycling among older people and those with a disability

6.26 Cycle infrastructure is sometimes viewed as a barrier to people with a disability accessing the transport network, based on the view that most do not or cannot cycle. But 15% of people in London with a disability do cycle – not that much less than the 18% of the general population. And 78% of people with a disability are able to cycle.

6.27 Cycling is a low impact exercise which can improve muscle strength but also provides a mobility aid. In the context of an ageing population, some mobility experts are increasingly seeing cycling as a way to help people with disabilities move around cities independently, with the majority of cyclists with a disability finding it easier to cycle than walk (Wheels for Wellbeing, 2017), easing joint strain, aiding balance and relieving breathing difficulties. Anecdotal evidence for people with a disability who do cycle show this to be the case, where walking is limited to one mile or less, but they are able to cycle much further, up to 20 miles or more, even with severe physical ailments.

6.28 Older people and those with a disability have the most to gain from cycling becoming a safer active transport option, as they exercise the least and are most at risk of additional health complications. And as outlined previously, every-day journeys offer the best opportunity to increase physical activity, with benefits for physical and mental health as people age. Cycling can also help to improve personal independence among these groups who are also generally more isolated and also more reliant on others for mobility, such as being driven or needing to use higher cost options such as taxis.

6.29 Cycling therefore gives these groups more transport choices, more freedom and independence and wider horizons, reaping significant social and physical benefits. For some it has been called a 'life saver': including those with severe physical impairments such as damaged limbs, arthritis, cerebral palsy and ME.

6.30 Unemployment amongst people with a disability is also generally much higher than among the general population; cycling could enable better access to job opportunities.

6.31 Yet many people with a disability rule cycling out as an option. They are not necessarily aware of the wide variety of machines that are available for a range of different needs: cargo bikes and trikes are particularly useful as they can also be used to carry heavy loads. Electric bikes (e-bikes) are also a good mobility aid, and come into their own for a much wider population in Camden, parts of which are very hilly particularly in the north towards Frognal, Belsize, Hampstead and Highgate. The cost of alternative bikes is also a factor: many are upward of £2,000. Bike to work schemes, such as the Green Commute Initiative, can help people spread the costs.

6.32 Older and people with a disability (as well as minority ethnic people and women) have a disproportionately higher need for protected cycling infrastructure and direct routes (Wheels for Wellbeing, 2017). Infrastructure for cyclists, including cycle parking for larger bikes, must therefore be more inclusive, to accommodate and enable a wide range of bike models and sizes. The Council should also work with groups such as Wheels for Wellbeing to promote cycling among communities with a disability.

6.33 Camden runs weekly cycle training courses for people with a disability or special educational needs at Swiss Cottage School which is a Special Educational Needs (SEN) school. Courses can be booked via the Council web-site.

6.34 Cycling among people with a disability is generally reflective of wider cycling levels: it is higher when the level of cycling is higher among the wider population. Increase the latter and the former will follow. Similarly, high quality safe infrastructure that is more accessible to people with a disability will also help to increase cycle levels among other groups that are currently excluded, particularly women and children.

6.35 Affordability and reducing the dominance of traffic in local streets also have significant implications for social inclusion. Travel needs to be affordable and, while walking and cycling are the cheapest form of transport, for longer journeys and for those who cannot travel by these modes, public transport (and particularly) buses offer the most affordable alternative. Those on low incomes are more reliant on bus services with half of the poorest fifth of the UK population not having a car, and rising to more than two thirds of job seekers (Transport, Accessibility and Social Exclusion, Campaign for Better Transport, 2013). Data for Camden is not available, however, given that the majority of households in Camden (65%) do not have access to a car, walking, cycling and bus travel are likely to be the modes that people use. This is confirmed by the Travel in London

data which demonstrates that the majority of residents (85%) already use these modes for their daily journeys. The impact on deprived communities is further analysed in the Section on travel and deprivation below.

6.36 The Mayor has frozen fares until 2020 and introduced the Hopper fare which allows interchanging at no cost within an hour. Fares are also free or heavily discounted for many vulnerable groups. This includes, for example, childen and students, apprentices, people over 60 years old, unemployed, and the Freedom Pass for those over 66 or with a disability. The Mayor's Equality, Diversity and Inclusion Strategy (Inclusive London, GLA, 2018) also highlights the importance of affordability and less traffic dominated Healthy Streets to encourage diversity and inclusion.

6.37 Reduced traffic and the accompanying road danger reduction also encourage more people to use the street, including children playing and social interaction among neighbours on residential streets.

Step free access (SFA)

6.38 Although Camden benefits from a very high level of public transport provision, not all of it is step free. Public transport is managed by TfL and the Mayor is committed to providing the most accessible transport network.

6.39 All buses are already adapted to be accessible, and indeed buses are the most accessible forms of transport. Over 95% of Camden's bus stops are accessible and this will rise to 100% with the planned improvements on Kilburn High Road. However, the underground and rail networks are more problematic. TfL has set out ambitious plans in the current Mayoral period (2016-2022) to make 30 stations SFA by 2022, which will make 40% of the network SFA.

6.40 Upgrades to Camden Town and Holborn will deliver SFA at two of Camden's major hubs and a feasibility study is underway for SFA improvements at West Hampstead underground station following the Council's bid to TfL's SFA programme in 2016. This work will continue over the coming years. However, 13 tube stations in Camden do not have SFA, as well as 4 Overground and 1 Thameslink stations. In 2012 The Camden Mobility Forum, which incorporates older people and those with a disability and interest groups, outlined their strong support for Camden Station upgrades, including step free access. Residents have expressed the challenges posed by inaccessible stations which limits their ability to remain independent and connected to their community.

6.41 The lack of SFA is particularly problematic at Kentish Town where a new Centre for Independent Living is opening in 2018. Camden Council is developing a new community resource centre at Greenwood Place in Kentish Town, led by people with a disability, for people with a disability, and run by a consortium of Camden

voluntary sector disability organisations led by Camden Disability Action. The Centre will offer a range of services and activities that support independence, inclusion, health and wellbeing, including separate spaces for services supporting mental ill-health and learning disabilities. People's access to the Centre will be severely constrained by the lack of SFA at Kentish Town Underground Station.

6.42 Officers will continue to lobby TfL for improvements here, particularly in light of predicted growth in the wider area – Kentish Town is a newly designated growth area. This will bring additional opportunities for S106 developer funding contributions which can be used to lever improvements. Officers will also be undertaking an analysis of all Camden's underground stations to identify which should be prioritised in future bids for SFA funding.

6.43 Londoners with a disability also experience barriers when using Camden's streets. Street furniture and clutter, such as bollards, posts, guardrails and A-boards obstruct free and safe movement through the environment and should be removed wherever possible and appropriate. Other hazards on the footway can make it difficult for both physically and visually impaired people to move, such as bins, café tables and chairs, and cables for EV charging points. Sufficient safe crossings and adequate crossing times have been highlighted as a particular concern for older people (Age Friendly Cities workshop, Age UK, September 2018), particularly around destinations frequented by people with a disability.

Camden Accessible Travel Solutions (CATS)

6.44 Camden's Accessible Travel Solutions (CATS) offers a range of services to support older people and those with a disability who are less able to use public transport. The Council provides travel concessions and transport support to over 40,000 Camden residents aged 60 and over or with a disability. Of these, there are just over 32,600 older people and those with a disability with a Freedom Pass which allows them free travel on all London Transport networks. Travel support is also provided to over 300 children with a disability to access schools and higher education and it is key to their ongoing independence that their environment becomes increasingly accessible to them and their families and carers.

6.45 This includes both an Older Person's and a Disabled Person's Freedom Pass which allows those Camden residents who meet the criteria free travel on all the London Transport networks within the Greater London area.

6.46 Within CATS there is a service for Adult Social Care which aims to deliver an excellent passenger and accessible transport service that promotes access to independence, choice and mobility for older residents and those with a disability. Fully accessible mini-buses are used to provide transport to resource, community

and day centres, luncheon clubs and clubs and activities that have out of hours services such as specialist disability groups, all of which are statutorily required.

6.47 The Council also offers door-to-door transport for non-statutory services, such as shopping and leisure trips, through Plusbus Door-to-Door which runs Monday to Friday. The scheme provides an accessible minibus service to destinations anywhere within the borough for residents of any age who find it difficult to use public transport. There are no restrictions on the numbers of trips that can be booked.

6.48 The Taxicard scheme which Camden also offers, gives London residents with serious permanent mobility problems and those who are severely sight-impaired subsidised rides in licensed black taxis and private hire vehicles. Taxicard users can travel when and where they want, providing the journey starts and finishes in the Greater London area, thereby increasing their independence and mobility. The scheme offers a 24-hour service, 365 days a year subject to the availability of taxis. This is a membership-based scheme and the number of rides assigned to an individual is dependent upon the extent of their disability.

6.49 The Council also loans Personal Mobility Vehicles (PMV) i.e. scooters, power chairs and manual wheelchairs to residents of the London Boroughs of Camden and Islington, directly to their homes. This scheme is for anyone aged 16 and over who has a mobility impairment. Vehicles are available for loan from one to seven days at a time, and membership of the scheme is free.

Travel and deprivation

6.50 People in deprived communities are generally more affected by the impacts of vehicles and traffic, but are least likely to own a private vehicle (Air Quality and Social Deprivation, an Environmental Inequalities Analysis, Final Report to Defra 2006). Some of Camden's most deprived communities live alongside the borough's most heavily trafficked streets which inflict problems of poor air quality, severance and road danger on the people who live there. While main roads are the most appropriate for traffic, we recognise that this may result in a worsening environment for our deprived communities. This is one of the reasons why we must reduce overall traffic volumes. Many main roads are also on the Transport for London Road Network (TLRN) managed by TfL. Camden will work with TfL and the Mayor to ensure that the Healthy Streets approach and efforts to reduce traffic levels are applied to all streets so that all Camden's population can benefit.

6.51 There is very little research on the links between travel choices and deprivation, particularly in London. To some extent a proxy of 'no access to a car' is considered in some data, however, given car ownership levels in the borough more generally (65% of households do not have access to a car), officers do not think this is an appropriate indicator. Nevertheless, officers have analysed

vehicle ownership and deprivation by using vehicle permit data to understand the potential impacts of proposals in the CTS on more deprived communities.

6.52 Figures 17, 18 and 19 below compare different levels of deprivation in different areas by: (i) public transport accessibility levels (PTAL), (ii) overall residents' permit volumes and; (iii) resident permit volumes and diesel vehicles.

Figure 17 Comparison of relative areas of deprivation with public transport accessibility levels (PTAL)

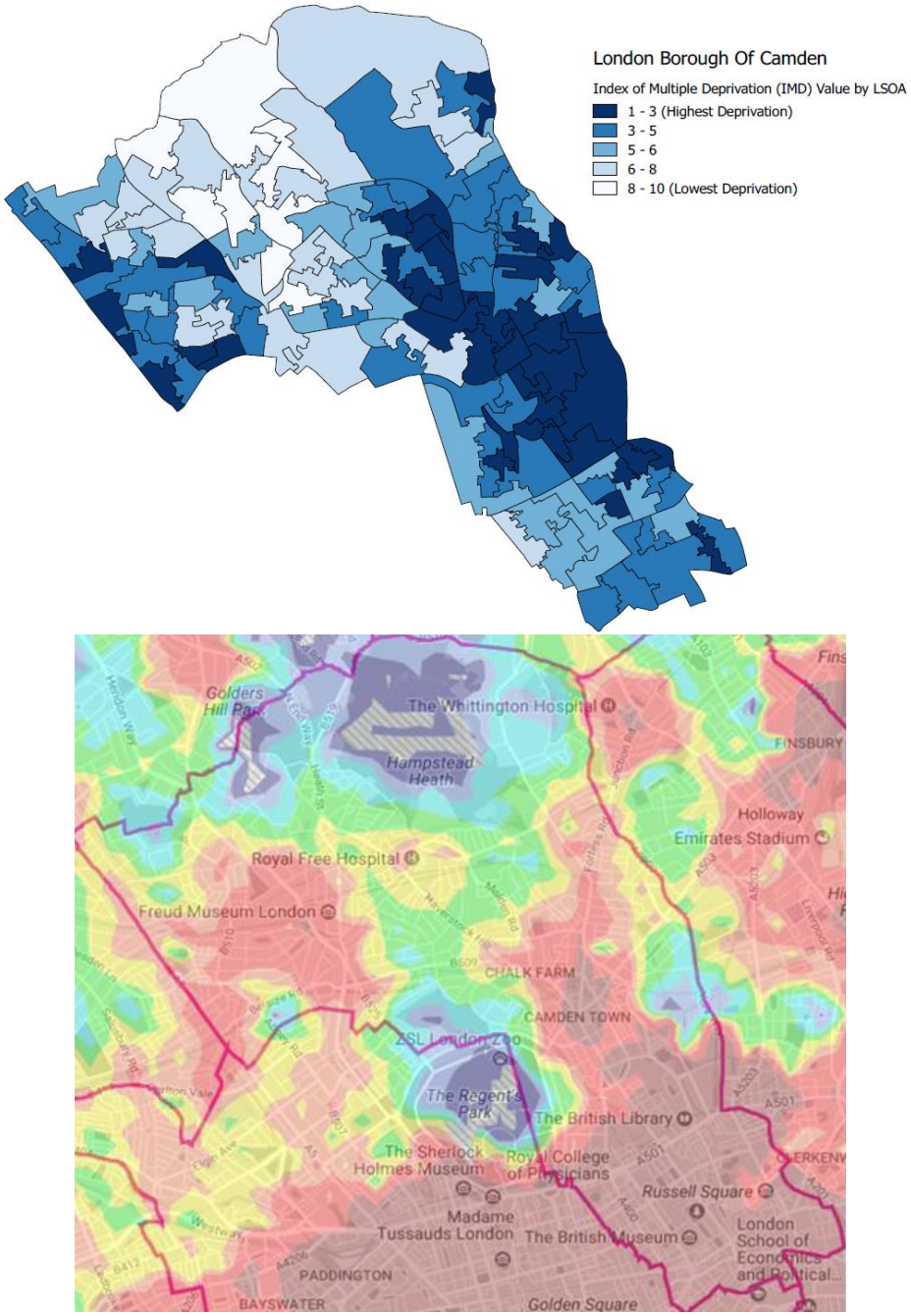


Figure 18 Comparison of relative areas of deprivation with overall permit volumes

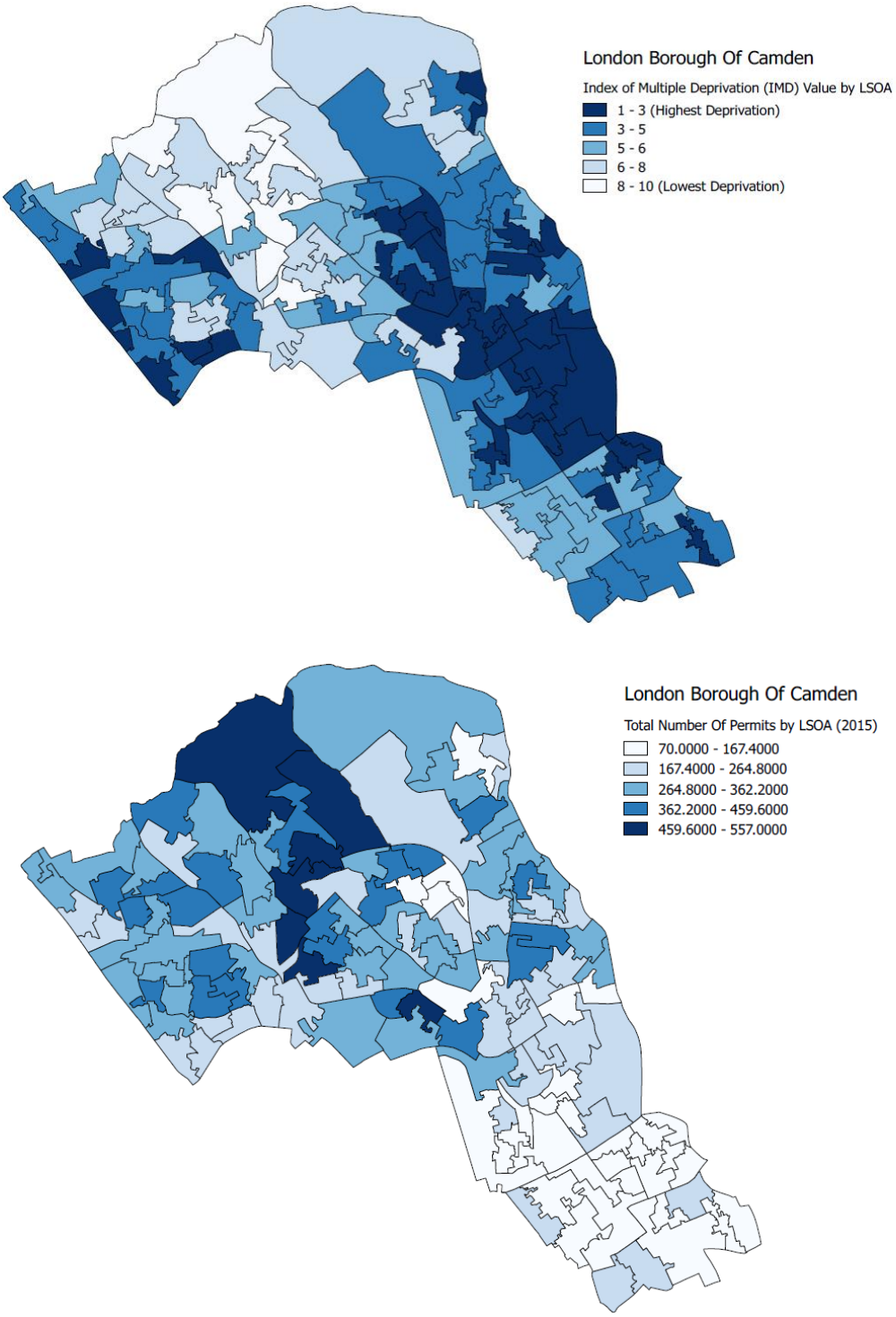
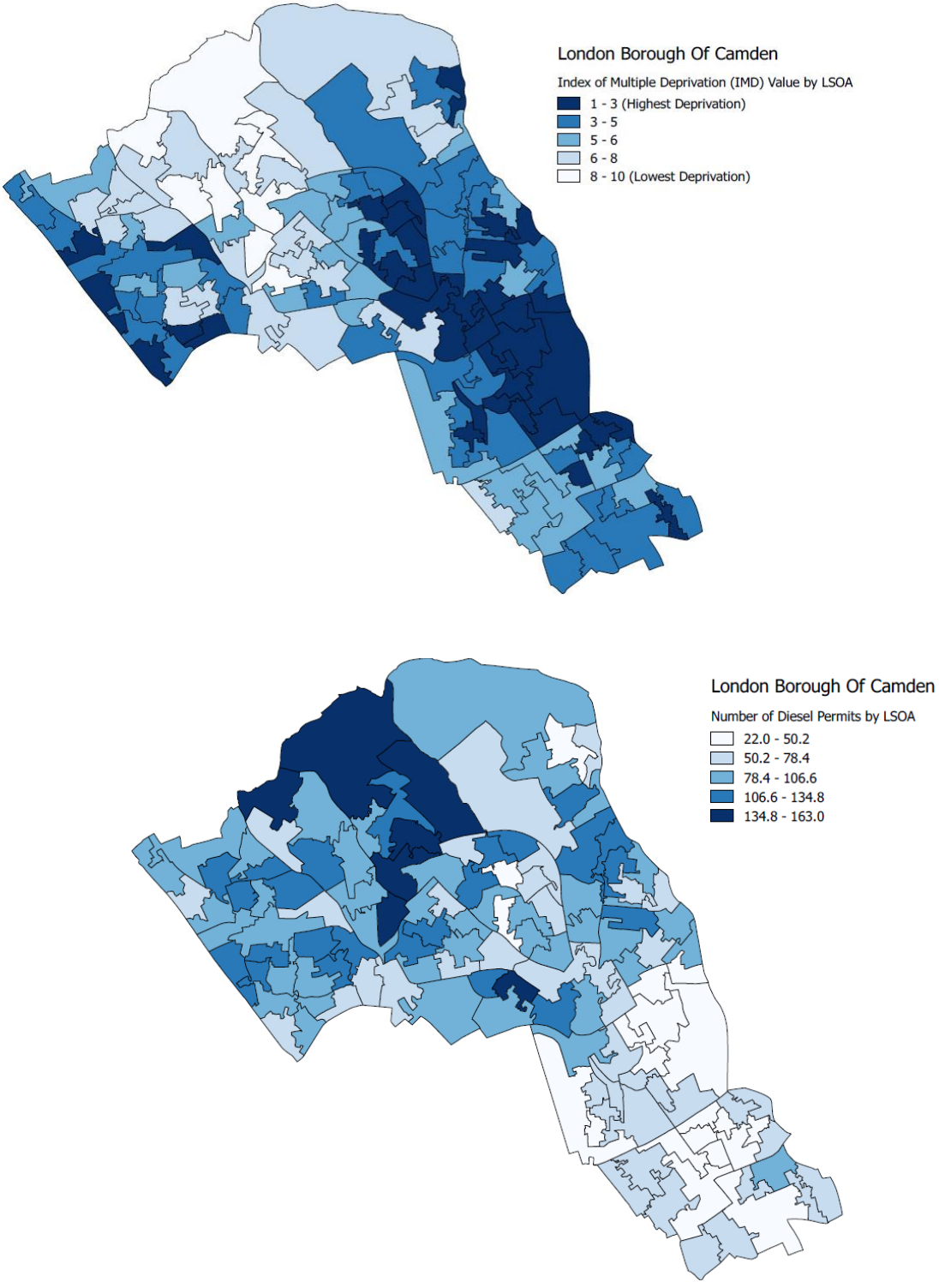


Figure 19 Comparison of diesel vehicle permits with relative areas of deprivation



6.53 Figure 17 compares deprivation with local public transport accessibility (PTAL), using the index of multiple deprivation (IMD) across Local Super Output Areas in Camden (Dept for Communities and Local Government, 2015) and a PTAL map of Camden where red equates to very good PTAL levels. They show that areas with higher levels of deprivation in Camden often also have very high levels of PTAL which, along with car clubs, cycle hire, walking and cycle facilities offer multiple alternative options to private car ownership.

6.54 Figures 18 and 19 show that areas with the highest IMD are comparatively less likely to (i) own a vehicle and (ii) be affected by higher charges for permits/paid for parking etc (resulting from the diesel surcharge) for diesel vehicles. They show that areas of the borough with the lowest levels of deprivation typically correspond with the higher levels of overall permits, and diesel vehicle permits.

6.55 DfT walking and cycling data does also shows that people from deprived areas are more reliant on walking but that they are less likely to cycle than least deprived areas. Indeed there is evidence to demonstrate that cycling is very much linked to higher income households: cycling levels increase with household income (London Travel Demand Survey, 2010-11, TfL) the people least likely to cycle three times a week are those who have never worked and the long term unemployed. The National Institute of Clinical Excellence (NICE) similarly notes that cycling participation is roughly equal across all income quintiles, but that the biggest growth has come from more wealthy households. Issues around deprivation are complex: deprivation is also linked to ethnicity and culture, and car use among many BME groups may be seen as a response to deprivation, where cars are used as a status symbol of wealth.

6.56 However, the benefits of cycling for deprived people may be higher than for other protected groups: it is the second cheapest way of travelling after walking (Cycle Scheme). It is estimated the average annual cost of cycling to work is £396, which compares favourably to commuting by train (£625) and private car (£3727). Sustrans also suggests that cycling could empower people, provide opportunities to increase physical activity, while cycle infrastructure, along with bike loan and hire, opens up opportunities for all people to travel.

6.57 There are also other health benefits: the reduction in air pollution and congestion and increases in physical activity can make a disproportionate improvement to people from deprived areas. Traffic reduction and facilities for cycling are likely to have a positive impact on health inequalities because people from deprived groups, who are exposed to the greatest risks from air pollution and traffic injuries, are most likely to benefit. The very old and the very young, as well as those with pre-existing respiratory or circulatory problems, will also benefit from a reduction in overall exposure to air pollutant. And while walking and cycling involve a level of risk, these are far outweighed by the benefits.

7.0 Streets as places

7.1 Streets make up more than 80% of public space in the UK. While their fundamental role is to support the efficient and safe movement of goods and people, they are also 'places' which people visit, where people live, work, play, shop, socialise encounter each other outside the confines of their homes and places of work. They contribute to, and help shape, the character of the city or neighbourhood.

7.2 Streets therefore also have a social and cultural role which makes a significant contribution to well-being locally and the city's liveability more widely. The quality and attractiveness of the built environment can play a fundamental role in creating a successful neighbourhood, contribute to social inclusion and regeneration, improve health and enhance quality of life, as well as personal security.

7.3 The international competitiveness of cities is also increasingly based on high quality places which are less traffic dominated and more accessible and attractive to spend time in – to live, work and visit. Understanding and enabling the multiple functions of a street and planning around city life rather than just movement is key to improving people's quality of life, and enhancing London's global standing.

8.0 The challenge of growth

8.1 London is the biggest it has ever been in its history. The 26 million daily journeys generated by the city's 8.7 million people as well as those travelling from outside the capital puts enormous pressure on the transport network (MTS, 2018), resulting in overcrowding both on public transport and the public highway. It is estimated that a further 2.1 million people will be added to London's population over the next 20 years, generating an additional 6 million trips a day. This increasing demand for mobility will also have to be balanced with improving the city for everyone: their health, prosperity, well-being and quality of life.

8.2 Camden's population is expected to grow to 265,300 people between 2016 and 2031, nearly 2,000 additional people per year (London Borough of Camden). In the same period the forecasts indicate that the number of households will grow by 19,200 or nearly 1,100 per year, and the number of jobs in Camden is forecast to grow from 286,000 to 375,000 by 2031. Growth will increase the demand for travel and mobility, placing additional pressure on the transport network. The Council will need to manage it in a way that does not further adversely affect the

physical, social and economic well-being of the people who live and work here, ie ensure sustainable growth.

8.3 Improved transport accessibility can unlock new growth areas, and with it the potential for large-scale investment, economic opportunity and regeneration. However, realising and maximising the benefits of new growth areas is dependent on a number of factors, and improving the public realm is a critical requirement (GVA, Crossrail Property Impact Study, 2012). For example, in relation to the new Elizabeth Line, the planned urban realm improvements have the potential to re-define Crossrail's stations as being "the centres of the communities they serve: attractive places with entertainment, public art, restaurants and public spaces, places to spend time in and not just to pass through' (Derwent London). They conclude that "environmental enhancements of the public realm are a trigger for new development activity when supported by improved (public transport) accessibility'. And conversely, unless an attractive retail and business environment is provided for consumers and developers, central London will become increasingly, uncompetitive compared with other centres and out-of-town malls (The Economic Benefits of Good Walking Environments, report to TfL Central London Partnership, 2003).

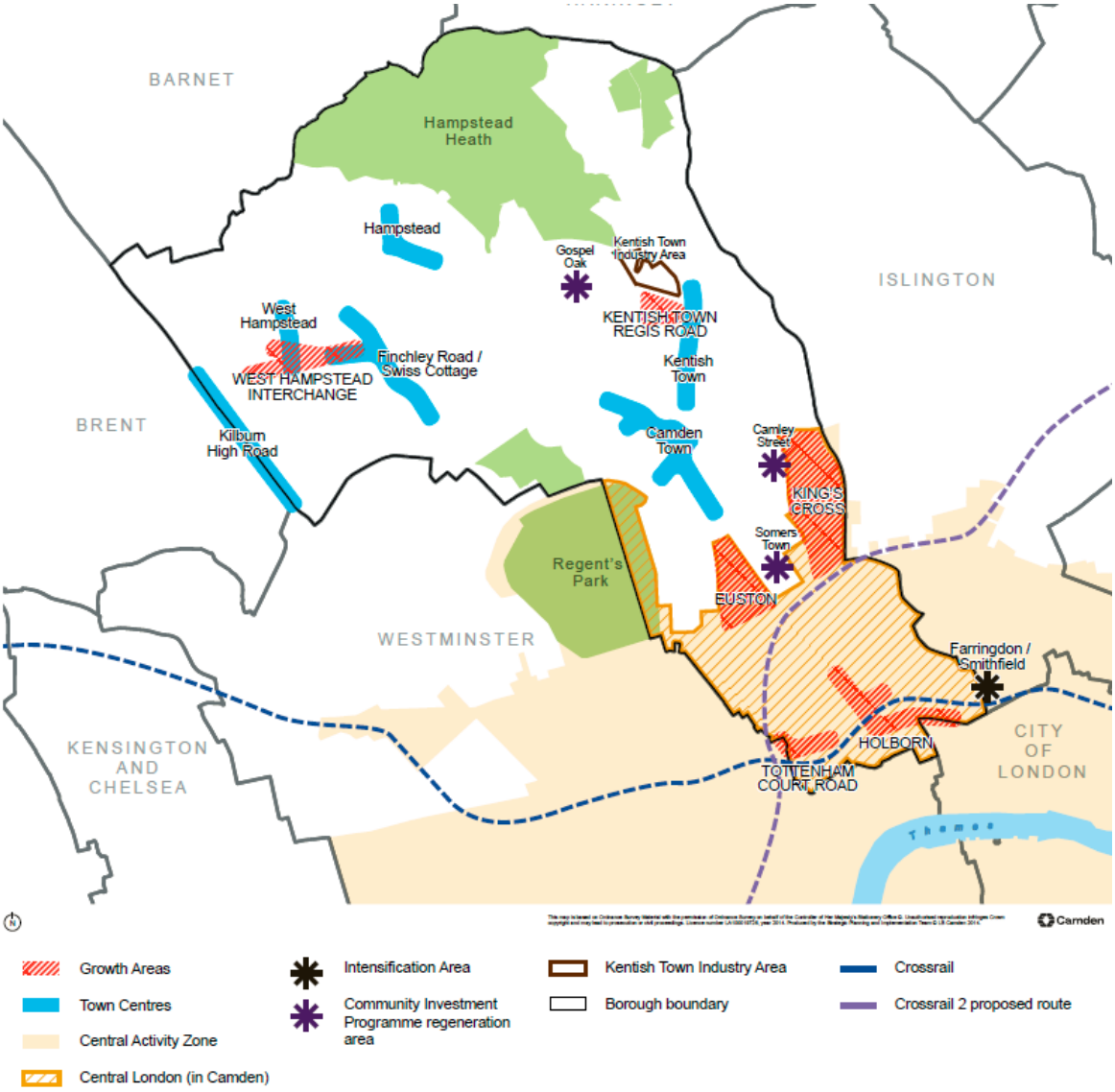
8.4 In particular environments that support walking and cycling will generate economic uplift: Homes near bicycle path have been found to support higher sales prices, and areas that facilitate walkability and attract pedestrians sustain higher rents, revenues and resale values. Similarly residential property values rise 1% when traffic is reduced by 50% (Phil Jones Associates, 2016).

8.5 Older people will comprise a larger proportion of the population in the future: most older people do not work, instead using services and activities which rely on local journeys rather than big infrastructure projects. We will need to ensure that the built environment can support the complex needs of an aging population to ensure that they remain independent, healthy, can access the services they need, and be part of an inclusive community.

8.6 Camden's Local Plan (2017) identifies several key areas for growth (Figure 20), including Holborn, Kings Cross, Tottenham Court Road, Euston, West Hampstead and Kentish Town/Regis Road. These locations will form the core of Camden's placemaking agenda. Kings Cross, which is the borough's largest development area, will have 2,000 new homes and 25,000 new jobs by 2031. It provides a mixed use of development - housing, commercial and community facilities, including Camden Council's offices, a leisure centre, library and school, and new public squares. Euston growth area will provide up to 3,800 new homes and 14,000 new jobs.

8.7 Kentish Town/Regis Road is a newly designated growth area, focusing on the Regis Road industrial site which offers opportunities to deliver new homes and jobs as well as new connections. There will also be development at other highly accessible locations, in particular Central London and the town centres of Camden Town, Finchley Road / Swiss Cottage, Kentish Town, Kilburn High Road and West Hampstead; and at locations that comprise the Council's Community Investment Programme (CIP).

Figure 20 Growth areas in Camden



Source: Local Plan, London Borough of Camden, 2017

Impacts of development and construction

8.8 Constructing the numerous buildings to provide new jobs and homes for a growing population will inevitably mean more construction vehicles on the road. This could result in more road danger and risk: evidence shows that construction vehicles are disproportionately involved in collisions with cyclists, and

perceptions of road danger and potential risk is associated with larger vehicles which could undermine efforts to encourage more walking and cycling. Other impacts will include noise as well as both local and borough wide disruption.

8.9 HS2 also presents challenges and opportunities for Camden: while the terminus will create the potential for new homes, jobs and open spaces, with new routes through and around the stations, the construction of HS2 will cause major disruption across the whole borough, affecting the lives of thousands of people around the new terminus and along the route for several years to come. Camden wants to see these plans integrate with the Network Rail, Crossrail 2 and Underground stations, and is working with HS2 Ltd to minimise the impacts. We are securing assurances on several issues, particularly noise, traffic and pollution, but managing and achieving the requirements of a major national infrastructure project and bringing benefits to the existing local community while minimising the impacts across the borough will continue to be a momentous and ongoing challenge for the Council.

8.10 Plant machinery used on construction sites is also an issue. While it is not transport per se, Non Road Mobile Machinery (NRMM) contributes 7% of all Nitrogen Dioxide and 14% of all PMs in London. The Council's planning processes can go a long way to addressing this pollution source including through Construction Management Plans (CMPs). The Council will also investigate introducing further obligations to better align with GLA's and the Council's emerging Clean Air Action Plans, particularly opportunities for monitoring and enforcement.

9.0 Technological advances in transport and infrastructure

9.1 The rapid emergence in recent years of new technology for transport, particularly mobile-phone/app based on-demand services, is likely to continue. Increasing mobility options can bring both advantages and disadvantages, and it is essential that these are considered and tools developed to keep pace and manage them effectively so that they deliver the services that London and the borough needs and contribute to delivering our Vision.

9.2 Many of the options are car-based: ride and car-sharing apps, autonomous vehicles (driverless/self-driving vehicles), and on-demand bus services are just a few of the new models of mobility. These are often promoted as a solution to London's transport problems, reducing the need for private car ownership and freeing up scarce kerb space currently used for parking which can be used for other purposes, particularly for more sustainable options. They can also improve accessibility for those with restricted mobility or at times and locations where other alternatives are in short supply, such as in the middle of the night to get to

or from an airport, or in the outer zones for onward travel beyond the reach of regular public transport services. However, evidence regarding their impacts is lacking and where it is available it is very mixed.

9.3 There is also a significant move to Smart Cities, whereby urban areas can make use of different types of infrastructure on the public highway to manage resources efficiently and share information using different types of electronic data and communication technologies using, for example, lamp columns, bus shelters, telephone boxes and bus shelters.

App-based on demand taxi services (Private Hire Vehicles)

9.4 The section on congestion (Section 3) has already discussed the significant rise of PHVs for on-demand ride sharing provision. While PHVs have a role to play in improving mobility especially for excluded groups in areas with limited public transport and at unsociable hours, it is evident from the data (London Stalling, GLA, 2017) that a very significant number (30,000) come into the congestion charge zone on Friday evenings and at the weekend, where there is excellent public transport provision, with many 24 hour services. They therefore contribute to congestion and pollution, and cause delays to buses. It is also likely that these journeys in Central London are short – ones which could be walked or cycled. Camden is working with TfL to limit the number of PHVs in Central London, particularly to help deliver Camden's LIP targets to reduce vehicle/km travelled.

Flexible car clubs

9.5 The environment for car clubs has undergone transformative changes in recent years: alongside the traditional back-to-base model new options for car sharing have entered the market and are being trialled in London, particularly the 'free floating' model. Cars do not have to be pre-booked; instead they can be picked up from and left in any permitted parking space, including residential and paid-for-parking. Effectively they are for one-way journeys. This model greatly increases flexibility and provides a wider range of parking opportunities at the destination

9.6 Camden has given a lot of consideration to the free floating model, however, the Council has concerns about their impacts on car use: increasing flexibility and parking opportunity will make it easier to choose to use a car, including for shorter one-way journeys, and during the hours of control. For example residents will be able to drive from one Controlled Parking Zone (CPZ) to another and leave a car there – journeys which they cannot currently make.

9.7 Existing data from floating car club operations shows that the majority of driven trips are under 5-6km – journeys which should be made by other modes, particularly in Camden which is very well served by public transport. Camden has

many attractions, particularly in the south of the borough, which draw people from across the capital and beyond.

9.8 This model may also encourage more people to come to Camden by car from a wider area, further increasing congestion and pollution. For these reasons, Camden does not currently support the free-floating model.

9.9 Evidence of their impacts is inconclusive, particularly in a central London borough like Camden: car ownership in the borough is relatively low and the borough has many attractions which could encourage more people to drive here, even though PTAL is generally high, particularly in the south of the borough. The MTS similarly notes that while flexible car sharing can improve mobility services they must be managed to ensure they do not undermine the Healthy Streets outcomes

9.10 Camden will also undertake further research to investigate the potential impacts of introducing flexible car sharing, particularly on how they contribute to addressing the transport challenges outlined in this Report and meeting our transport objectives.

On-demand bus services and ride sharing

9.11 TfL is investigating the potential for an on-demand bus services in Outer London. Similar to booking a PHV, such a service is demand responsive, and therefore appropriate in locations where demand may not be sufficiently high to warrant a regular 12 hour or 24 hour service, but where car dependency is higher and other forms of public transport are less viable.

9.12 Some privately run services are already on-stream. These routes are generally fixed and licensed by TfL so that they can use existing infrastructure such as bus stops and stands, although there is no timetable. Services are currently being provided in Wandsworth, Battersea and East London.

9.13 Camden welcomes this model particularly for the north of the borough and for east/west radial routes at particular times. Such services have the potential to reduce car use, particularly in low PTAL areas. There has been a long-standing concern about lack of bus services in the Highgate area of Camden, particularly at school journey times. This part of the borough is also less-well served by underground and rail so an on-demand bus service could help to reduce car use in this part of the borough, particularly on the school run.

9.14 However, similar to other on-demand services, Camden has concerns that businesses may only operate services where there is high demand to ensure financial viability. This could result in a focus on Inner London, leaving Outer London, where they are most needed, a ‘transport desert’. Research shows that

on-demand transport tends to be concentrated in high-density, high-income areas and there are examples of cities where privately-run routes have duplicated known publicly provided bus routes where there is high demand.

9.15 Ride sharing is also expanding to provide lift-sharing, whereby individuals book a PHV or taxi which can then be shared with another passenger for a discount. These more flexible services effectively make car use more attractive and putting more vehicles on the road may actually exacerbate the decline in bus passengers. They should only be available when they can demonstrate that they complement existing public transport options and among communities that need them most.

Autonomous vehicles

9.16 There has been much discussion on autonomous vehicles (AVs) and they have certainly attracted a lot of interest as well as investment. Many car manufacturers are already developing models and it is estimated that by 2035 up to 25% of new vehicles sold could be fully autonomous. Legislation is also being discussed to manage them.

9.17 AVs have been presented as the panacea for London's transport problems: they make efficient use of limited space and could revolutionise mobility. In the longer-term no-one would have need of a private vehicle - including taxis, PHVs and car clubs. All parking spaces could then be reallocated to, for example, cycle lanes and wider footways. Indeed whole streets could be off-limits which would provide large amounts of public space. They may also offer benefits for people who are generally restricted from travelling such as the elderly or those with a mobility disability and improve their access to opportunities

9.18 However, more recent views on AVs are more critical. AVs are still cars and may still encourage car dependency. In fact they may even increase it as those who do not currently own a car or have a licence will be able to use one. Distances might become longer, and people might make more frequent journeys. They could also take people off public transport (or even replace it), walking and cycling, and result in more congestion. Room will still need to be made available for freight and servicing.

9.19 AVs rely on a range of sensors to interact with the world around them, including identifying potential hazards – mainly other road users but also reading road signs and detecting traffic signals, and needing sufficient space. AVs require changes to the street to allow them to work and accommodate them. As with the first, original wave of car ownership and growth in the 1960s and 70s, this could mean reverting to designing streets to align with the car, albeit a driverless one, and reintroducing or maintaining traffic dominance in public space.

9.20 For example, it has been suggested that one benefit is that pedestrians will be able to cross the road at will, wherever it is convenient, in the expectation that AVs will automatically stop. But the resulting stop-start movement for AVs could increase congestion and undermine their benefits. In the worst case scenario it may lead to a demand for dedicated or segregated carriageway space to enable AVs, such as more guard-railing and barriers to prevent pedestrians making these informal and random movements which impede AVs, including strictly enforced pedestrian crossing areas which would reduce pedestrian access. The requirement for several dropping off locations could also be a barrier to delivering cycle or bus infrastructure and freight/servicing, with people getting in and out of AVs conflicting with cyclists and bus passengers.

9.21 Safety is also a concern: while AVs could be safer, it may have to be the case that other road users would have to fit around AV capabilities in order to minimise unpredictable movements which AVs are less able to respond to.

9.22 Ultimately, AVs focus on technology in isolation rather than a people focused solution where AVs are considered as part of a much wider transport system. Regulation and policy are urgently needed to ensure that decision makers are not caught on the back foot and that technological advances deliver wider transport objectives.

Smart infrastructure

9.23 The mayoral strategy for London supports the exploration of the potential for utilising smart infrastructure to share information and manage resources, specifically how they can assist boroughs in deployment when old ‘street furniture’ (lamp posts, benches and bus shelters) is renewed, by supporting a new generation of lampposts whose capability goes beyond providing lighting but can include, for example, air quality sensors, public wifi, cameras, electric vehicle charge points, electricity for filming and festivals, and potential for 5G rollout.

9.24 Digital connectivity and smart infrastructure supports smart technologies in terms of the collection, analysis and sharing of data on the performance of the built and natural environment, including for example, water and energy consumption, air quality, noise and congestion. Streets and urban development could be fitted with smart infrastructure, such as sensors, to enable better collection and monitoring of such data. As digital connectivity and the capability of these sensors improves, and their cost falls, more and better data will become available to improve monitoring of our streets and environment.

Bike sharing

9.25 The new models of dockless bike hire schemes, which started operating in London in 2017, offer greater flexibility for cycle hire which Camden welcomes.

One of the key advantages of this model is that it can increase access to cycling, particularly in areas not covered by the Santander fixed docking stations, with positive impacts for health and congestion. However, they also need to be managed. As bikes can effectively be left anywhere, initially they did cause a number of problems including blocked footways and carriageways, and street clutter. TfL and London boroughs have worked together to agree a Code of Practice with guidelines to be followed by boroughs and operators, and Camden, similar to several other boroughs, has undertaken a trial to understand their impacts.

10.0 Summary

10.1 It is evident from the preceding sections in this Evidence Base Report that reducing dependency on car travel is absolutely fundamental to addressing our major transport challenges and future proofing the borough as it grows. At minimum walking, cycling and public transport are essential for making London's transport system work: they make the most efficient use of limited space and contribute to more efficient movement of people and goods. They also address the serious and urgent health issues of air quality and inactivity, and are key to realising a more liveable city: one which is safer, more pleasant and attractive to live, work, visit, and spend time in - a city that will attract and encourage the investment and development that will provide new housing and employment opportunities for a growing population.

10.2 Rebalancing the transport network in favour of walking, cycling and public transport will also ensure that growth in Camden will be sustainable, in line with Camden's wider objectives outlined in the Camden Plan. Creating the conditions for more people to travel by sustainable, healthy active travel is therefore the main focus of this Strategy, ie delivering the Mayor's Healthy Streets. Utilising advanced data collection and analysis can further assist in Camden's transport development aims

10.3 The majority (85%) of trips taken by Camden's residents are already made by sustainable modes. Currently (three year average 2014/15 to 2016/17) the highest proportion of trips are made on foot (42%), by rail/underground (26%), by bus (13%) and by bike (4%), with 13% made by car or motorbike and a further 2% by taxi (London Travel Demand Survey, TfL, 2016).

10.4 Yet, at street level, Camden can still feel unwelcoming to pedestrians and cyclists in many parts of the borough, particularly to older people and those with a disability. Although the level of sustainable travel in Camden is high, the majority of these trips are on public transport, and mainly on the underground or on rail, not on the public highway, ie not on foot or by bike. At street level, where *active* travel takes place (walking and cycling), in Camden both private car use

and total motor traffic volumes still dominate as shown in Table 3. Private car use makes up largest proportion by far of all vehicles on the road at over 54%; when combined with taxis and motorcycles this rises to 73% (London Borough of Camden Annual Screenline Surveys, 2017). Buses only make up around 4% of traffic.

10.5 The screenlines show that the level of cycling in the borough has increased significantly since 2006, while all forms of motor traffic show a decrease. This has also happened against a backdrop of population growth both in London and in Camden, and demonstrates that growth is not necessarily associated with increasing traffic. However, data shows that cycling is still a minority mode and decreases in motor traffic have plateaued in recent years with some vehicle types increasing in real terms.

Table 3 6 hour traffic counts across all Camden's screenlines

	2006	2012	2013	2014	2015	2016	2017	% change 2006-2017
Cycle	21,125	35,978	34,102	32,123	32,631	30,246	32,198	52.4
Motorcycle	17,947	14,089	13,592	12,914	12,637	12,795	12,457	-30.6
Car	115,544	99,173	97,142	99,880	97,616	98,628	98,283	-14.9
Taxi	33,348	27,209	26,257	25,108	23,016	24,030	23,298	-30.1
LGV	35,642	31,920	30,901	33,298	33,362	32,340	33,053	-7.3
OGV (1)	9,189	8,721	8,886	6,093	5,831	8,598	7,070	-23.1
OGV (2)	2,016	1,369	1,075	1,022	1,231	1,296	1,260	-37.5
Bus/coach	8,492	8,533	8,950	8,350	8,274	7,959	8,123	-4.3
TOTAL	243,303	226,992	220,905	218,788	214,598	215,892	215,742	-11.3
Total motorised trips	**222,178**	**191,014**	**186,803**	**186,665**	**181,967**	**185,646**	**183,544**	**-17.4**

Notes
(1) LGV are light goods vehicles, vans under 3.5 tonnes.
(2) Other Goods Vehicles (OGV 1): includes all rigid vehicles over 3.5 tonnes gross vehicle weight with two or three axles
(3) Other Goods Vehicles (OGV 2): includes all rigid vehicles with four or more axles and all articulated vehicles.

Walking and cycling potential – overcoming barriers

10.6 Yet, we have seen that there is significant potential to increase walking and cycling, particularly from public transport use to reduce overcrowding, but also a switch from car use where the majority of residents' trips are under 5km. Cycling in particular has the most potential to replace both car and public transport journeys as these are journeys which are more likely to be too long to walk. But unlike walking, those people who do currently cycle represent a much narrower section of the community: regular cyclists are more likely to be younger men, white, working and non-disabled and the growth in cycling has also occurred almost completely among men. Cycling has grown at an average of 6.8% a year

since 2005-6, compared to 3.5% among women (London Travel Demand Survey, TfL Strategic Planning, 2016). There is almost a fivefold difference in the level of cycling between 'white' cyclists and other ethnic groups. But interestingly, cycling is linked to wealthier income households. The growth in cycling has also occurred across all age groups, although it drops off sharply after 60 years of age. Cycling is currently not diverse or inclusive.

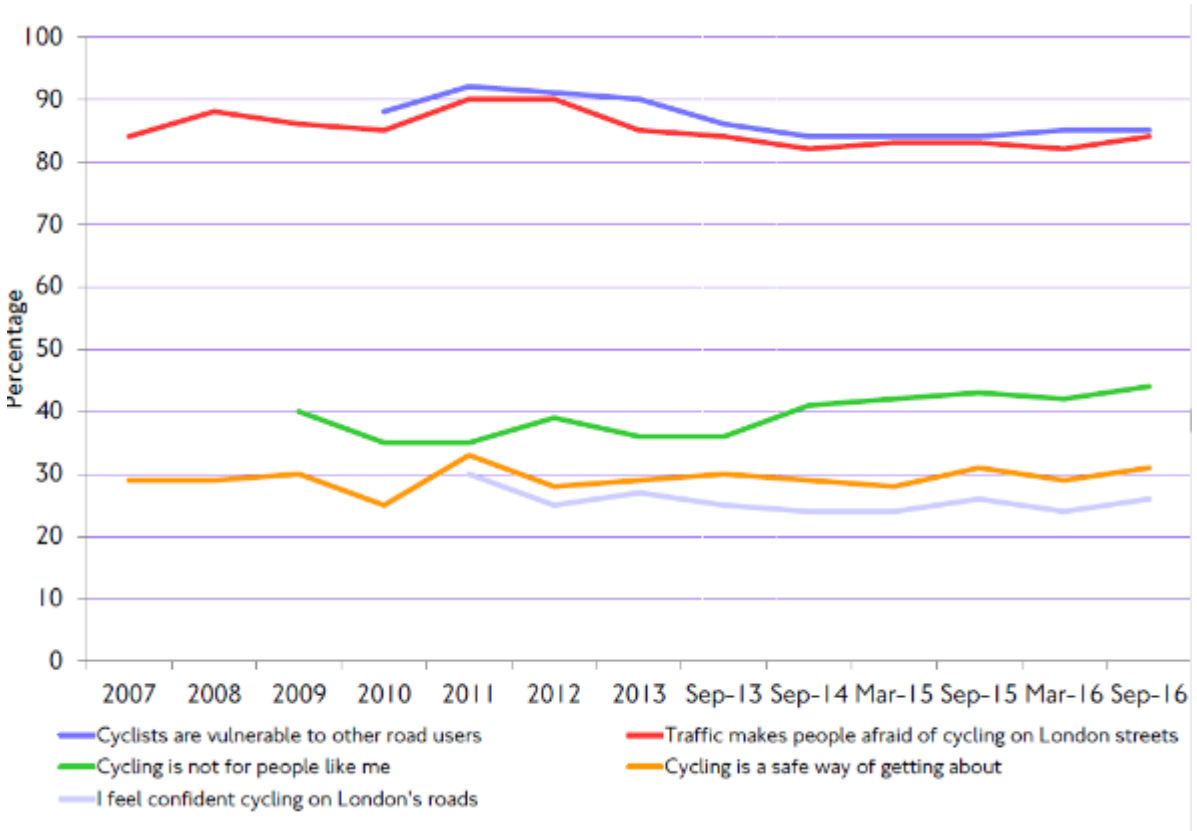
10.7 Much cycle potential therefore comes from women, ethnic minorities, younger and older people, and those on a lower income. Only 27% of current cycle trips made in London are made by women, compared to 55% of potentially cyclable trips. Similarly, black, Asian and minority ethnic (BAME) groups account for 15% of current cycle trips, but 38% of potentially cyclable trips. This means that not all groups are realising the health benefits of an active lifestyle.

10.8 The greatest potential to increase walking is also among women – 58% potential walkable trips could be made by women compared to 42% by men. This probably reflects the higher volume of trips made by women, although the difference among age groups is relatively even (TfL Planning, Strategic Analysis, 2016).

10.9 Many of the barriers to walking and cycling have been discussed in the Section on Accessibility. Making walking and cycling safer, addressing the perception of road danger, and working towards Vision Zero will be absolutely critical in getting people to switch to more sustainable modes, and achieving Camden's target for 88% mode share by 2021, and 93% by 2041. There is a wealth of research on the barriers to more people cycling (DfT, TfL, Sustrans, Urban Planning and Transport Research), and all pinpoint road danger, or the fear of danger, as the single biggest issue, particularly for excluded groups such as women, older people and children who are less risk averse, as below (Figure 21).

10.10 At a UK Government enquiry in 2013 it was acknowledged by all that the perception of danger of sharing roads with heavy traffic was the chief barrier to getting more people cycling, and that segregated cycle lanes are the most effective way of getting more people to ride more often. While all the statistics demonstrate that in reality the danger is not very high and much has been done to reduce it through, for example, better street design and speed restrictions, there is a widely-held perception that cycling on London's urban roads is a risky activity: it is a travel choice that requires bravery rather than skill. Cycling is not necessarily dangerous, but to some it is *frightening*, even to people who already cycle and are competent cyclists. This fear is based on cyclists' inherent vulnerability and perception of a greater risk of conflict with other vehicles, and how they may fare in a collision. And this perception is higher among non-cyclists than cyclists, and among women, children and older people.

Figure 21 Attitudes to cycling: fear is a major barrier to more people cycling



Source: Travel in London Report 9, TfL, 2015

10.11 Based on current provision and total length of highway (276km), only 1.14% of Camden's streets have cycle segregation. This rises to just under 4% if local residential streets are excluded. Providing attractive high quality infrastructure that offers safe, comfortable and connected routes, particularly segregated from traffic, which accommodate a range of different users, abilities, and bikes is key to getting more people to cycle, including the reallocation of carriageway space.

10.12 We will also need to identify and prioritise routes as part of a wider network, where there is greatest potential to meet current and encourage further demand. TfL's Strategic Cycle Analysis identifies potential routes which could help to deliver increases in cycling levels. The SCA identifies future cycle demand and the key strategic routes and connections in London with the greatest potential to increase cycling, with the aim of increasing the percentage of Londoners who live within 400metres of a cycle route from 9% in 2017 to 34% by 2022. Camden is working with TfL to help deliver a route from Tottenham Hale to Camden Town, as well as various other schemes, to help deliver that network.

10.13 Many people are discouraged from owning a bike by the lack of secure overnight bike storage at home, particularly as many residents live in flats and would have to carry a bike up and down stairs. Camden will continue to deliver its bike hangar programme, which was launched in 2016, and provides secure,

lockable and covered bike storage on the carriageway, based on residents' requests. An emerging challenge is providing lockable home storage for different types of bikes, such as trikes, trailers and cargo bikes, which are much bigger, particularly to accommodate the needs of people with young children and those with a disability (as discussed above). It is anticipated that this demand will increase alongside improved cycle infrastructure which aims to enable people of all ages and abilities to cycle.

10.14 Everyone is a pedestrian at some point, but walking is particularly important for older and people with a disability who make a significant proportion of their trips on foot. Many of the barriers to walking have been discussed in this Report, particularly with regard to these groups; they include pollution, obstructions and clutter, and again, safety and the perception of safety are major challenges that need to be addressed (Attitudes to Walking, 2017, TfL). A place to rest and where older people have opportunities to interact with others is also of vital importance as is an accessible transport network which supports opportunities for social interaction.

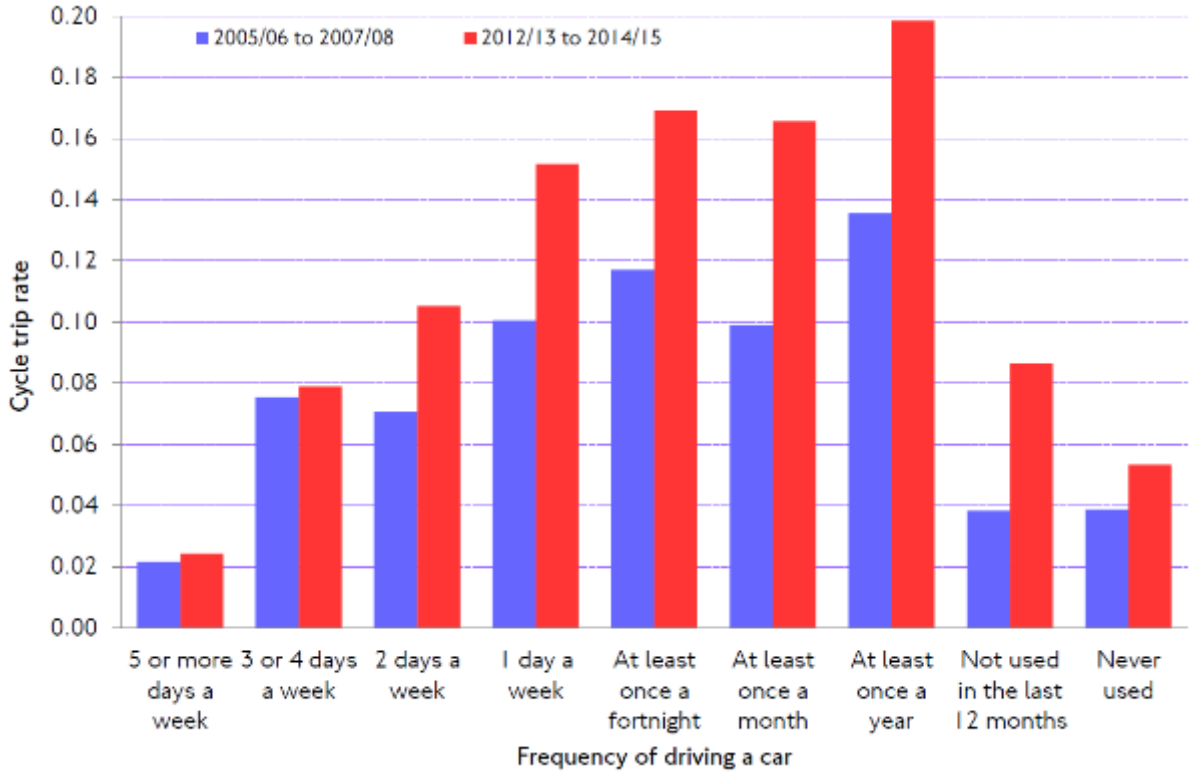
10.15 However, from attitudinal studies undertaken by TfL, evidence also shows that people are not prepared to walk more than 15 or 20 minutes if there are other options available, including public transport which in Central London is extremely well provided for – effectively a victim of its own success. This may also be the case for cycling, even though the evidence shows that cycling is likely to be the quickest option for all journeys currently made by public transport in Central London (see Figure 12). This means that alongside infrastructure improvements (particularly for cycling), efforts must also focus on 'softer' measures which encourage people off public transport such as through publicity campaigns.

10.16 One element of this is the underlying issue of car culture: once people own a car they are far less likely to consider alternatives, and underplay the disadvantages of car travel such as congestion while giving greater weight to other minor benefits such as air conditioning (Attitudes to Cycling, TRL Report). Indeed, it has been shown that car culture is more of a barrier to modal shift than road danger where drivers do not perceive cyclists as bone fide road users (Drivers' Perceptions of Cyclists, TRL report 549, DfT, 2002), which, in its worst guise has evolved into an 'us and them' clash and can result in aggressive driving behaviour. Dedicated cycle infrastructure sends a signal to other road users that cyclists are legitimate road users, and to potential cyclists that they are welcome, and that cycling is something people can and should do.

10.17 Figure 22 below demonstrates cycling, which has the greatest potential to replace car driven trips due to length of journeys, is linked to car dependency which must be tackled. This is supported by data which shows that cycle trip rates among car users have hardly grown at all among frequent car users,

although there has been very strong growth among less-frequent car users (Roads Task Force – Technical Note 14 Who travels by car in London and for what purpose?, 2014). Frequent car use is also linked to multiple car ownership – the more cars there are in the household, the more people drive. More radical approaches are needed to challenge this mind set.

Figure 22 Change in individuals' cycle trip rates by frequency of car use (London residents)



Source: TfL, Travel in London Report 10

10.18 Providing high quality alternatives to motor vehicles use is not sufficient to encourage a switch. To significantly affect car culture more needs to be done simultaneously to minimise motor traffic and disincentivise driving – both car ownership and use (Science and Environment Policy, European Commission, 2010). All European bike-friendly cities in Denmark, Germany and The Netherlands have made their cities bicycle friendly but also sought to restrict cars through parking policies and street design which makes it the least attractive option. This approach also helps to mitigate the high cost of providing segregated cycle facilities which would not be needed or at least not needed as much. The Council will consider new charging mechanisms such as for parking both on the street and on-site, traffic restrictions to inessential traffic, particularly for those journeys that could be made by other modes, and behaviour change measures to encourage people to reduce car use.

10.19 There are also cultural barriers, particularly for cycling which is overwhelmingly a 'white' activity, but does not reflect the cultural balance of London, or indeed Camden, which is home to an extremely diverse community.

10.20 Efforts must also focus on reducing traffic coming into and moving through the borough to ensure the most effective impact. And, in the context of limited funding we will need to ensure that reduced resources are targeted as a priority at addressing the urgent transport challenges, and with the most cost effective solutions.

Carriageway space reallocation

10.21 Providing high quality environments for more efficient modes will often require the reallocation of space, particularly in Camden where public space is scarce and at a premium. Reallocation of space covers a range of interventions, such as removing or prioritisation different users at a street, town or city (borough) level and may involve the restriction of vehicles at particular times of day.

10.22 Space reallocation, including traffic restrictions and road closures, however brings an additional set of challenges due to the need to assess, through modelling, the impacts on carriageway capacity and traffic flows as well as the negative impacts on car drivers themselves. This indirectly gives motor traffic priority. Moreover, models inherently prioritise *vehicle* rather than *people* movement, and therefore they do not account for what *people* want to do: they assume that all existing motor vehicle trips on the network are essential and fixed, which they are not, or will increase with growth, even though all the data points to the contrary. Models do not account for behaviour change and modal shift which may result from any improvements and which, indeed, form the rationale for such schemes.

10.23 There is also often a widely held public view that traffic restrictions and reallocating carriageway space will make congestion and pollution worse. This is similarly often based on the assumption that traffic levels are fixed while the available space is reduced, or that it will be displaced into quieter, less appropriate residential areas. The result is that often alarmist predictions stop schemes getting off the ground.

10.24 Reallocating space away from motor traffic to more efficient, sustainable active and healthy modes and implementing traffic restrictions may have immediate impacts on existing flows as capacity is removed, but it is not necessarily the case that these will be long-term. Evidence shows that in many cases traffic 'evaporation' occurs: in the same way that providing more space for vehicles induces car use, removing it may have the opposite effect. Traffic is not fixed: traffic is made up of *people* making rational choices, and changing the transport network can directly affect those choices by changing people's options. Research shows that predictions of traffic problems are often overly pessimistic, and rarely materialise with people making a far wider range of behavioural responses than assumed (S. Cairns, S. Atkins, and P. Goodwin, Disappearing traffic? The story so far, Proceedings of the Institution of Civil Engineers – Municipal Engineer, 51(1), pp. 13–22, Institute of Civil Engineers, 2002).

10.25 TfL research also shows that the health benefits of slowing traffic and increased congestion dwarf the disbenefits, with most coming from the health impacts of a shift to walking and cycling. Increased congestion can increase local pollution but it is complex, for example it is influenced by fleet composition among other factors, but it is outweighed by an increase in active travel by a ratio of 65:1 (Speed, Emissions and Health, an Evidence Summary, TfL, 2018).

10.26 The corollary of designing to minimise the impacts on traffic flow is a 'business as usual' approach which accommodates existing, or even enables growing, motor vehicle use, to the detriment of other users, together with the problems of pollution and congestion. This is neither feasible nor desirable, as discussed in this Report. Reallocating carriageway space will inevitably affect some car owners and drivers who may suffer more inconvenience. But the negative impacts of car use are more far reaching, both to a wider population and more detrimental - to the economy, to public health and well-being. Car owners and drivers will also benefit from cleaner, calmer, safer and less congested streets and healthier lifestyles, as well as more travel choices. There may be some pain in the transition process but tough decisions will be needed to help people make the switch to more efficient travel.

10.27 There may be specific impacts on particular groups who have greater need for a car such as those with a disability or older people. These are discussed in more detail in the Equalities Impact Assessment (EQIA) which is appended to this Strategy but, as outlined in this Report, these are expected to be minimal due to current demand, and the widely available alternatives, which should improve as a result of the CTS.

10.28 Better communication is needed to publicise the benefits of schemes while emphasising that there are likely to be initial problems. The Council should also make more use of pilots or temporary trials where they may be appropriate. Trials offer an opportunity to test measures to gain a better understanding of their real-life implications and evidenced with factual data. They may also allay public fears and predictions while also allowing them to be amended to mitigate the impacts in the final design.

10.29 Investment in the public realm and providing an attractive environment for walking and cycling (including reducing traffic dominance and improving road safety) also offers extremely good value for money. As outlined in this Report, road casualties, congestion, fuel costs and other motorised travel costs, inactivity, noise and air pollution and carbon dioxide impose a significant cost on society – mainly to health and the economy - which everyone pays for directly or indirectly. There are therefore substantial savings arising in these areas where investment will lead to modal shift, which the Cabinet Office Strategy Unit estimate to be around £40billion a year, and an economic benefit-to-cost ratio of investing in walking and cycling as 13:1 (Cabinet Office Strategy Unit. An Analysis of Urban Transport, Nov. 2009).

10.30 In particular investment in cycling schemes can achieve more for less, with benefit-to-cost ratios in the range of 5:1 to 19:1, but reaching as high as 35.5:1 (Phil Jones Associates, 2016). For example, using the WHO Health Economic Assessment Tool (HEAT) to evaluate the cost-benefit ratios of the Council's West End Project as part of the Business Case, showed that the health benefits alone from the predicted increase in cycling were in the region of £40million over 30 years, effectively paying for the cost of the project. The total benefit-cost ratio, even excluding the HEAT evaluation, is estimated at 10.17:1 (London Borough of Camden, Business Case for the West End Project, submission to TfL, 2016).

10.31 There are also values associated with increased economic activity, as discussed in Sections 3.45-3.51 (parking and economic viability) and Section 8 (Growth). Research shows that landowners, developers and businesses clearly perceive the importance of streetscape in maintaining the value of their assets. The appeal of the street environment is described as having a critical importance in attracting tenants, customers and retaining the image of businesses in general. The existing or potential streetscape is an inherent part of a tenants' decision to locate to an area and is an important facet of continued economic success. (TfL, Economic Benefits of Good Walking Environments, TfL and Central London Partnership, 2003).

10.32 There are also costs to the Council: increases in bicycle trips have the potential to reduce road maintenance costs, as bicycles produce only insignificant wear and tear on roads compared to heavier vehicles. .

10.33 Camden has a long-standing commitment to sustainable, active travel choices and we have been at the forefront of bold and innovative action to tackle the challenges we face, and making use of best practice. Camden first introduced car-free developments 20 years ago, and in 2017 became the second borough, after Islington, to introduce a borough-wide car-free development policy as part of its Local Plan. Camden was one of the first London boroughs to introduce a borough-wide 20mph speed limit following years of delivering 20mph zones. Camden was a key borough in delivering the Seven Stations Cycle Link, an east-west cycle route connecting Paddington and Liverpool Street stations, which is fully segregated on its route in the borough. Camden was the first London borough to trial 'light segregation' for cyclists on Royal College Street, and use step-track segregated cycle facilities, on Pancras Way. In 2016 Camden piloted a Healthy Schools Streets programme which reduces the school run while enabling pupils to make their journeys by active travel. Camden has also introduced surcharges for diesel parking permits, and was one of the first boroughs to introduce car clubs in 2003.

10.34 These initiatives have all made a significant contribution to Camden's success as well as its reputation for leading the way. The urgent challenges facing us, however, demand that we now have to go further to see a step-change, so that we can continue to play a leading role in delivering both the Mayor's and our own ambitions.