**Written evidence submitted by Transport for London (EVP0138)**

## Introduction

Transport for London (TfL) is the integrated transport authority responsible for the day-to-day operation of London's public transport network, road management, and the strategic delivery of transport objectives to make London a welcoming place to live, work, and visit. The topics under consideration in this review are central to delivery of London's ambitious goals. This includes a commitment to sustainable mode shift, with an ambitious target for 80 per cent of trips to be made by walking, cycling or using public transport by 2041; to deliver substantial decarbonisation by 2030; and to eliminate all deaths and serious injuries from London's transport network by 2041.

We welcome the opportunity to share our observations and experience of accelerating the shift to zero emission vehicles and understanding the role of road pricing in supporting delivery of a range of policy objectives. We also draw your attention to our submission to your call for evidence on the future of VED (October 2020) and our response to the Department for Transport's (DfT) 'Decarbonising transport: setting the challenge' document (July 2020). Both are appended.

The ongoing coronavirus pandemic presents a range of challenges, but also some opportunities. We can address the challenges of the climate emergency, poor air quality, and public health inequalities if we choose a green recovery from the pandemic, generating green innovation, skills, and jobs through the entire supply chain and across industries.

To achieve this vision, Government should:

(1) Commit to achieve the targets of the Paris Agreement and the UN Sustainable Development Goals as quickly as possible; and

(2) Create a framework to deliver this commitment by:

- **Rapidly pivoting investment away from fossil fuel vehicles towards zero emission vehicles and infrastructure**, including transitioning the national bus fleet and required supporting infrastructure, and including electric vehicle (EV) charging infrastructure.

- **Urgently prioritising investment that will trigger mode shift to active travel and public transport**, in order to achieve a thriving, zero-carbon economy and a healthier public, improving air quality, reducing road danger and saving the NHS and wider economy billions of pounds annually.[1] The Ultra Low Emission Zone (ULEZ) in London is an example of where some of these objectives are being successfully achieved.

Accelerating the shift to zero emission vehicles

### 1.1. The feasibility, opportunities, and challenges presented by the acceleration of the ban of the sale of new petrol and diesel vehicles to 2030

We believe **the 2030 requirement for new petrol and diesel vehicles and the 2035 date for hybrids is feasible** if it is accompanied by the right policy conditions to stimulate demand and scale up production.

**There are significant opportunities** in making this commitment and investment: The Intergovernmental Panel on Climate Change (IPCC) has said we need a decade of action to ensure we are on track to meet the 1.5C Paris Agreement target. As the host of COP 26 later this year, there is a huge opportunity for the UK to showcase how it is achieving these targets as quickly as possible.

While banning the sale of new fossil fuel vehicles is an important step to help address the climate emergency, we must ensure that mode shift to active travel and public transport remains the key transport priority to support the Government's goal for active travel and public transport to become the natural first choice. This aligns with London's ambitious target for 80 per cent of trips to be made by walking, cycling, or using public transport by 2041.

**Additional areas of opportunity include:**

**Introduce electric vehicle (EV) charging infrastructure and adequate regulations to improve the customer experience.** With investment and installation of a network of charging points, confidence increases among those considering a switch to EVs. Since 2016, we have installed over 300 rapid charging points, increasing London's total rapid charging points to over 500 and the total number of electric charging points to almost 6,000. Over half of these have been dependent on up-front investment from the public sector. Rapid charging points in London are three times more popular than the UK average, with pre-pandemic monthly averages of 18 to 23 uses per day at our top ten rapid charging sites. Further detail of London's infrastructure requirements can be found in the London Electric Vehicle Infrastructure Delivery Plan[2] and our recently published report to showcase the progress made and next steps[3]. We are currently in the process of updating our forecasts and refreshing London's EV infrastructure strategy.

In addition, there must be adequate regulations to ensure that charge points are compatible with all vehicles; clear information on charging fees is provided at the point of use; universal payment methods are accepted; and high reliability standards are set.

**Accelerating fleet renewals.** Government policy and funding could instigate rapid changes. This should include a properly funded, targeted national scrappage scheme to incentivise the acceleration of fleet renewal. For example:

- TfL's Zero Emission Capable (ZEC) taxi licensing requirement that came into force in January 2018 has shown how policy can stimulate vehicle innovation. This requirement has resulted in nearly 4,000 new ZEC taxis being made at a factory in Coventry, creating 1,000 jobs. The innovation in zero emission taxis has also led to a new line of investment ZEC vans, resulting in further job creation.
- The taxi delicensing scheme has resulted in 3,949 of the oldest, most polluting vehicles being removed from the fleet.

- TfL's scrappage schemes have removed over 8,000 of the most polluting vehicles from London's roads[4]. The scrappage schemes for vans and the heavy vehicles have been suspended to new applications due to high demand and limited funds.

Government policy and funding to accelerate fleet renewals could encourage:

- **The expansion of electric vehicle ranges**, particularly Light Goods Vehicles (LGVs), which currently do not meet every commercial fleet's needs, especially smaller operators who require operational flexibility and longer range.
- **Significant investment in battery technology, manufacturing and recycling facilities**, at large scale, is required to meet demand for both cars and LGVs.
- Greater transparency in the supply chain to ensure the manufacture of electric vehicles is both **ethical and sustainable**.

**Cost savings and efficiencies**. Embedding a circular economy approach would minimise costs and maximise efficiencies throughout a vehicle's life cycle stages.

**Growing electricity grid resilience**. Energy UK's 'Connecting Your Fleet - A guide for businesses in Greater London' report[5] highlights that growing investment in smart charging, vehicle-to-grid technology and battery storage of EVs provides an opportunity to explore using batteries as a two-way energy source.

**Improving air quality** has been a key focus for London and will remain so for the foreseeable future. The capital does not meet legal limits for $NO_2$ or World Health Organization (WHO) health-based targets for particulate or matter ($PM_{2.5}$). We have introduced schemes such as the Ultra Low Emission Zone (ULEZ), which has reduced nitrogen oxide levels in central London by over a third and reduced road transport carbon emissions by six per cent in the zone[6]. Whilst the ULEZ and its forthcoming expansion are delivering significant improvements, it is clear that the implementation of zero emission zones and targeted measures will be required to ensure the whole of London is compliant

by 2025. We must also focus on non-exhaust emissions (NEE), not just tailpipe exhaust emissions, which will become the dominant source of emissions as tailpipe emissions reduce to zero. Further studies are required to understand the contribution of NEE to local and national air quality, as well as understand the health and environmental effects. Funding is required to support technological innovations to reduce NEE.

**The biggest risk is inaction**. A strong commitment, a clear framework and adequate investment from Government will signal to the market where further investment, skills and resources should be urgently deployed. This will allow us to achieve ambitious targets at pace. Achieving the necessary mode shift and demand reduction required to decarbonise transport against a backdrop of recovery from Covid-19 requires an added layer of confidence and certainty from Government to take and encourage action.

**Beyond this, the major challenges include:**

**Affordability and availability** remain a barrier, particularly for heavier LGVs. Even for passenger cars, costs have not yet reduced enough to make EVs a feasible option for many. This could be helped with both the Government's plug-in vehicle grant being increased and available for all types of vehicles and a national scrappage scheme.

### 1.2. The actions required by Government and private operators to encourage greater uptake of electric vehicles and the infrastructure required to support them

**<u>Actions by Government</u>**

Whilst we support the transition to zero emission vehicles, **the fundamental transport priority must be to focus on accelerating modal shift** and for public transport and active travel to become the natural first choice. The DfT outline this priority in their 'Decarbonising transport: setting the challenge' document, and it aligns with London's aim. The wider goals of driving down road danger, improving public health, and decarbonising transport will only be realised if the zero-emission transition includes a strong focus on modal shift.

**Set more ambitious standards that help people switch to zero emission vehicles while investing in cleaner vehicles and infrastructure.** This sends a strong signal to the supply chain and changes behaviours. In London, a suite of policies, such as the introduction of the ULEZ, were implemented alongside investment to clean up our own vehicles, such as transitioning our bus fleet to Euro VI emissions standards. These actions resulted in a 97 per cent reduction in the number of state primary and secondary schools located in areas exceeding legal pollution limits – from 455 in 2016, to just 14 in 2019 – and a 94 per cent reduction in number of Londoners living in areas exceeding legal limits for nitrogen dioxide ($NO_2$). However, 99 per cent of London still exceeds WHO recommended air pollution limits. To help address this and generate new highly skilled jobs, we are ready to fully transition our bus fleet of 9,000 buses to be zero emission but investment from Government is required.

**Financial and fiscal incentives** are required to address the higher cost of zero emission vehicles to incentivise consumers to switch. Financial incentives should include: continuing purchasing subsidies (e.g. a zero emission car grant); reducing VAT on EVs; improving capital allowances for fleets; a properly funded, targeted national scrappage scheme; and, a 'Go Zero' campaign. Fiscal measures, such as increasing VED on fossil-fuelled car sales while maintaining VED incentives for EVs, would also provide a clear signal to consumers.

**Sustained infrastructure funding**. Our rapid utilisation data shows that demand for TfL's charge point network has steadily increased throughout 2020 as compared to before the pandemic despite a decrease observed in March-May and November during periods of national lockdown. We are currently revising London's infrastructure needs, and with our successful track record, further delivery could be immediately secured with more funding. Working with TfL and London Councils, London boroughs have now delivered more than 2,000 on-street residential charge points through the Go Ultra Low City Scheme, funded by the Government's Office for Zero Emission Vehicles (OZEV). By spring this year, we expect this to grow to 3,000 delivered. This has proven a highly effective mechanism for delivering charging infrastructure in London

**Standards for plug-in hybrids**. We acknowledge that the sale of new hybrid vehicles will be banned from 2035. Plug-in hybrids require regular charging to maximise their environmental benefits. We propose standards for plug-in hybrids are set with minimum performance and standard requirements, including on zero emission ranges and geo-fencing capability. The use of geo-fencing also requires standards set by national Government to assure relevant authorities that plug-in hybrids are compliant when operating in zero emission mode. To accredit geo-fencing, a raft of issues require resolution, for example ensuring accurate vehicle location, secure telematics to broadcast vehicle data, compliance and enforcement databases and an audit mechanism.

**Adequate regulations to improve the customer experience.** The customer experience of EV charging infrastructure is currently fragmented and a more co-ordinated approach is required. As we expand charging networks, there must be adequate regulations to ensure that: charge points are compatible with all vehicles; clear information on charging fees is provided at the point of use; universal payment methods are accepted; and high reliability standards are set.

**Collaboration with different stakeholders**. We are committed to supporting EV uptake and therefore will work closely with the Government and other stakeholders, including our EV Infrastructure Taskforce, to deliver this.

**Future-proofing charging technology**. Further research and development is required to support innovation in infrastructure and smart charging, such as Wireless Charging and Intelligent Energy Management Systems.

**Dynamic National Charge Point Registry**. The Government's EV Energy taskforce rightly identified that better charge point data acquisition and sharing mechanisms are needed. A dynamic National Charge Point Registry with an obligation on operators to provide data would permit us to facilitate efficient planning and operation of charge points and maximise public funds. It is critical to set an obligatory framework for the private sector now, before delivery advances too far.

**Actions by private operators**

**Increased private sector buy in**. In London, the public sector has provided for initial rapid deployment, delivering 50 per cent of all EV infrastructure and over 60 per cent of rapid charging infrastructure[7]. The private sector has not been delivering as we had hoped. We are now reviewing previous assumptions and will be producing a refreshed London EV infrastructure strategy later this year.

**Increased contribution** from commercial market players such as charge point operators, fuel retailers, garage/depot operators, car park operators and other retail businesses and landowners to address London's EV charging needs. This will also require partnership working with public bodies to identify and facilitate sites on publicly owned land, and potentially facilitate grid upgrades.

### 1.3. The particular challenges around decarbonising buses and how these should be addressed

**TfL has an aspiration for all buses in London to be zero emission by 2030,** with a firm commitment by 2037 at the latest. At more than 9,000 buses, London's bus fleet is the biggest in Europe. The transition to zero emission and delivery of TfL's 2030 ambition will require additional Government funding beyond the like-for-like replacement of the bus fleet. Our 2030 ambition requires £1bn of investment to 2036/37 including garage power upgrades, which require upfront investment for the next six years.

We have identified five key challenges to decarbonising the national bus fleet:

**Uncertainty:** A lack of strong, bold policy, funding and visible delivery is preventing momentum building and an adequately rapid transition from happening.

**Access to capital**: Covid-19 has reduced access to capital for bus operators.

**The high cost of the transition**: The transition to a zero-emission bus fleet and supporting charging infrastructure requires a substantial amount of capital. For

example, zero-emission buses are currently 50 per cent more expensive than internal congestion engine (ICE) buses.

**Security of garage tenure:** Bus operators are reluctant to invest the substantial capital required to electrify their garages if they have a short lease or other insecure tenure. This is affecting circa 15 to 20 per cent of garages in London.

**Double deck vehicle manufacturing capacity:** Double-deck vehicles are relatively unusual internationally, and fewer still are manufactured with the right-hand drive configuration. Relying on vehicles manufactured abroad or via a dominant manufacturer in the UK creates risk for UK operators.

The Government could help unlock these challenges through the following actions:

**A clear goal and strategy.** Providing a clear strategic statement of when the UK bus fleet will be zero emission and how this will be achieved. Any target and associated funding must include London. London represents between a third and a half of all bus orders in any given year in the UK and is broadly responsible for a third of all bus kilometres. The transition to a zero-emission bus fleet needs to be considered as a true national strategy.

**A commitment to invest in zero emission infrastructure.** A multi-year commitment of direct investment in bus garage/depot power upgrades and charging infrastructure, and on street charging infrastructure or hydrogen infrastructure for longer distance routes. We are helping to kickstart this process with the Mayor's Green New Deal Fund.

**A longer-term commitment to investment in zero emission buses** including:

- A per bus subsidy that covers the cost of the premium between an ICE/hybrid bus and a full zero emission bus. The subsidy could be reduced over time.
- Alternatively, a commitment could include exploring some form of underwriting of the vehicles to reduce the risks and increase the incentives for bus operators and bus lessors.

- A per bus subsidy market mechanism that compensates operators for removing mid-life ICE buses from their fleets.

**Amended planning controls.** Tighter controls are required to safeguard land currently used for bus garages, bus stations and bus stands against a change in use.

**Support for UK EV manufacturing.** It is imperative that existing double-deck manufacturers have the help they need to expand their capacity to support the transition. Bringing more manufacturers into the double-deck market will also be key.

### 1.4. The Government's ambition to phase out the sale of new diesel heavy goods vehicles, including the scope to use hydrogen as an alternative fuel

We support the Government's ambition to phase out the sale of new diesel heavy goods vehicles (HGVs) and have identified some considerations to achieve these ambitions:

**Set a date for the end of diesel HGVs**. We encourage Government to match TfL's ambition and set 2040 as the date for the end of diesel HGVs, if not earlier.

**The role of battery electric as a HGVs power train.** Battery electric HGVs are most likely to be used for urban and regional distribution with modest duty cycles and at likely weights of up to 30 tonnes.

**The role of transitional fuels**. We encourage Government to provide clarity. We recognise that zero carbon is the ultimate target and that transitional fuels may be able to help towards this but are not without their drawbacks.

**Availability of zero emission HGVs**. No zero emission HGVs are yet commercially available. We welcome Government support to identify which energy source will dominate the HGV zero emission transition. Once zero

emission products are available, financial incentives for vehicles and appropriate infrastructure will be required.

**The production of hydrogen must be powered by renewable electricity**. So-called 'green hydrogen' from water electrolysis could be used in many applications.

**The benefits of hydrogen**, in terms of greater vehicle range and faster refuelling, may be well suited for the largest vehicles with arduous duty cycles.

**Road pricing**

### 1.5. The case for introducing some form of road pricing and the economic, fiscal, environmental and social impacts of doing so

**The case for road pricing**

As outlined in the Mayor's Transport Strategy, road pricing can play an important role in achieving policy objectives to reduce and improve traffic flows, manage congestion, and improve air quality, and can generate funding to reinvest into safe, clean and sustainable transport. It also supports the reallocation of street space for active travel and bus priority.

London has implemented a number of road pricing schemes. The legislation exists for other local authorities to also implement road pricing. We currently operate the following schemes:

The **Congestion Charge Zone (CCZ)** applies to all vehicles in a 21km$^2$ area of central London and has been in operation since February 2003.

The world's first **ULEZ** was implemented in central London in April 2019. The ULEZ is currently the world's toughest vehicle emissions standard. Its objective is to encourage a switch to cleaner vehicles. It affects only the oldest and most polluting vehicles: no charge applies to compliant vehicles.

The **Low Emission Zone (LEZ)** applies only to heavy vehicles. It has operated across Greater London since 2008 and operates 24/7, 365 days a year.

Each scheme has successfully delivered against its main objectives (further details are outlined below) and has also led to positive secondary effects such as a reduction in road casualties. To maintain the effectiveness of schemes, we continue to review and amend them. Forthcoming changes include tougher LEZ standards which will be introduced in March 2021 and an expansion of the ULEZ to inner London in October 2021.

Building road pricing into any plans for expansion of road network capacity, such as has been done for the Silvertown Tunnel, helps manage the demand for car travel and supports our Healthy Streets approach of prioritising sustainable modes. TfL is also investigating the feasibility of a Greater London Boundary Charge, which would potentially apply to vehicles registered outside London that are driven into the capital. Income raised would be reinvested in the bus network and active travel. Any proposals taken forward following the feasibility study would be subject to a full public consultation.

**The impacts**

**Economic**

**Road pricing can help address the economic impact of congestion**. The CCZ was considered necessary as central London was the most congested area in the UK. Despite the success of the scheme, congestion is still a problem, costing the city's economy £4.9bn a year[8].

**Improving air quality can reduce costs to the NHS and social care**. For example, the ULEZ policies are predicted to result in the avoidance of over 250,000 new cases of $NO_2$ and $PM_{2.5}$ related disease and 1.1 million new air pollution related hospital admissions London-wide by 2050. This is a reduction of around one in every three air pollution-related diseases and will result in a cost saving to the NHS and social care system of £4.2b[9].

TfL's annual impact monitoring following the introduction of the CCZ suggested that the introduction of the scheme had a neutral impact on business performance in the central London economy. Furthermore, there is a wealth of evidence from London and around the world that encouraging more walking, cycling and public transport use, and addressing car dependency, can have positive economic impacts[101112].

## Fiscal

**National road pricing could help to fill the national funding gap** created as VED and fuel duty are diminishing.

**National road pricing could accelerate mode shift to achieve zero carbon targets.** We strongly recommend that the link should always be considered a feature of road pricing by law. Reinvesting a significant proportion of any revenue from a national road pricing scheme in active travel and public transport would support the mode shift urgently required to achieve ambitious net zero targets. Revenue from any such schemes could also be used to provide support to vulnerable or low-income groups via a targeted scrappage scheme or incentives to get the most polluting vehicles off the road, as TfL has done in London.

## Environmental

TfL's road pricing schemes have led to significant environmental improvements.

**CCZ:** In its first year, the CCZ led to a reduction in congestion of 30 per cent, a reduction in unique vehicle entries of 18 per cent in charging hours and a 34 per cent reduction in vehicle kilometres. The charge also reduced traffic emissions inside the zone equating to 8 per cent of $NO_x$, 7 per cent of $PM_{10}$ and 16 per cent of $CO_2$.

**LEZ:** Since its inception in 2008, the LEZ has driven a notably high compliance rate of over 99 per cent for phase 3 and over 97 per cent for phase 4[13]. As a

result, the majority of drivers do not pay anything. The scheme has contributed to improving London's air quality and reducing carbon emissions.

**ULEZ:** The impact of this policy was observed even before the scheme came into effect as people moved to cleaner vehicles in preparation beyond what would have been be expected through natural churn. In April 2020, 80 per cent of vehicles were compliant (compared to 39 per cent in February 2017). The ULEZ has reduced nitrogen oxide levels in central London by over a third and reduced road transport carbon emissions by six per cent in the zone[14]. We forecast that the extension of the ULEZ to inner London in October 2021 will lead to around 30 per cent less NOx across London as a whole.

**Addressing inequalities**. Children, older people, people from BAME backgrounds, disabled people and people living in low-income communities are less likely to be from car-owning households but more likely to be adversely affected by the wider negative effects of car ownership and use[15]. Improved air quality could prevent the 4,000 premature deaths attributable to air pollution each year in London and close the gap on health inequalities[16].

**Current fiscal measures for vehicle owners – VED and fuel duty – do not fully represent the external costs imposed by vehicles** (emissions, congestion, collisions resulting in injuries and deaths, and other impacts)[17]. National road pricing could be an opportunity for such costs to be more accurately recouped and to achieve policy objectives by setting charges appropriately.

**Road pricing can also have positive road safety impacts**. Road pricing can help reduce road danger by supporting modal shift onto public transport (which has a much lower risk per journey) and managing the flows of traffic. London has continually surpassed the national performance in reducing the number of people killed and seriously injured on the network, and with the increasing numbers of people now walking and cycling in London, it plays an important role in managing overall traffic. Research[18] indicates that London's CCZ reduced peak-period vehicle travel by 10 per cent and collisions by 30 per cent in the priced area and reduced collisions in nearby areas by 16 per cent.

## 1.6. Which particular road pricing or pay-as-you-drive schemes would be most appropriate for the UK context and the practicalities of implementing such schemes

### Schemes that encourage sustainable transport

Road pricing schemes should encourage **mode shift** to walking, cycling and public transport. Schemes should also support **improvements in road safety**, and delivery of **air quality** and **decarbonisation** targets as quickly as possible to reduce premature deaths and address the climate emergency. A recent independent report by the Centre for London considered how London could utilise the latest technology to create a simpler, smarter and fairer approach to road pricing[19].

### Schemes that address a clearly defined problem or objective

Any road pricing scheme should aim to achieve a clearly defined objective (as, for example, Workplace Parking Levies aim to do) and be based on solid evidence. In terms of operating and enforcing a road pricing scheme, considerations include: the geographic extent; the charge level; signs and lines; technology; enforcement; and payment channels.

## 1.7. The level of public support for road pricing and how the views of the public need to be considered in the development of any road pricing scheme

### Public support for road pricing

According to recent polls[20], public attitudes to road pricing are changing as awareness about air quality and the climate emergency are increasing. Data suggest that people are amenable to pricing for the right reasons if the objectives of the charge and use of the revenue are well-articulated and their benefits are clearly apparent. London's experience has also shown the importance of offering financial support via targeted scrappage schemes and ensuring sufficient notice is given to residents.

**Considering the views of the public**

**The public consultation process is a key element in the development of TfL schemes and is undertaken** except for in extraordinary circumstances as provided for in statutory Mayoral guidance. The consultation process provides the opportunity for the development of schemes to be informed by feedback.

**Feedback from the consultation process can also help shape complementary and mitigation measures**; both are important for public acceptance and to avoid negative impacts. For example, to mitigate the financial impact of the ULEZ and LEZ on vulnerable groups the Mayor provided £48m in scrappage funding. Scrappage grants were made available for small businesses, charities and low-income and disabled Londoners and targeted at ULEZ and LEZ non-compliant vehicles[21].

## 1.8. The lessons to be learned from other countries who are seeking to decarbonise road transport and/or utilise forms of road pricing

**a) Decarbonising road transport**

Several other cities around the world are developing and implementing schemes to facilitate the decarbonisation of transport.

Norway, and particularly Oslo, has heavily promoted the uptake of EVs. This has been achieved through generous tax incentives, and owners of EVs are often exempt from the country's various road tolls or receive significant discounts. The incentives have been popular and EV uptake is significant.

In response to Covid-19, London has developed the Streetspace programme, which has included quickly widening pavements, creating temporary walking and cycle lanes and closing roads to through-traffic. These measures support social distancing and enable millions more people to change the way they get around our city safely without turning to cars.

The United States federal agencies have been directed under an Executive Order to procure zero emission vehicles to reduce air pollution and stimulate decarbonised economic activity[22].

### b) Road pricing

London is a world leader in air quality schemes and EV policy, and we stand ready to share our experience so that it can be built on nationally. Few cities have schemes as old or as geographically extensive as London's CCZ. Singapore and Stockholm's schemes are the most comparable. London's ULEZ has been described as one of the boldest air quality policies in the world.

In Norway, cordon schemes are favoured with drivers charged for passing toll points when entering cities. In Oslo, the scheme involves three cordon rings around the city boundary, an inner area and a central area. Originally aimed at raising revenue for transport improvements, many such schemes now have a congestion management and environmental focus.

## 1.9 Summary

While we recognise the ongoing challenge of Covid-19, it is vital that Government creates a framework to achieve the targets of the Paris Agreement and the UN Sustainable Development Goals as quickly as possible. This will allow the UK to rapidly pivot investment away from fossil fuel vehicles towards zero emission vehicles and infrastructure.

The Government must also urgently prioritise investment that will trigger mode shift to active travel and public transport, which may include road pricing, in order to achieve a thriving, zero-carbon economy and a healthier public – improving air quality, reducing road danger, and saving the NHS billions of pounds annually.

February 2021

**Endnotes**

[1] https://www.cbi.org.uk/media/5539/2020-09-cbi-economics-caf-report.pdf
[2] http://lruc.content.tfl.gov.uk/london-electric-vehicle-infrastructure-taskforce-delivery-plan.pdf
[3] http://lruc.content.tfl.gov.uk/london-electric-vehicle-infrastructure-delivery-plan-one-year-on-november-2020.pdf
[4] https://tfl.gov.uk/modes/driving/scrappage-schemes
[5] https://www.energy-uk.org.uk/publication.html?task=file.download&id=7673
[6] https://www.london.gov.uk/sites/default/files/ulez_ten_month_evaluation_report_23_april_2020.pdf
[7] http://lruc.content.tfl.gov.uk/london-electric-vehicle-infrastructure-taskforce-delivery-plan.pdf
[8] https://inrix.com/press-releases/2019-traffic-scorecard-uk/
[9] https://www.london.gov.uk/sites/default/files/modelling_the_long-term_health_impacts_of_changing_exposure_to_no2_and_pm2.5_in_london_final_250220_-4.pdf
[10] http://content.tfl.gov.uk/town-centres-report-13.pdf; http://content.tfl.gov.uk/healthy-streets-a-business-view.pdf
[11] http://content.tfl.gov.uk/town-centres-report-13.pdf
[12] http://content.tfl.gov.uk/healthy-streets-a-business-view.pdf
[13] http://content.tfl.gov.uk/cclez-online-factsheet-apr20-jun20.pdf
[14] https://www.london.gov.uk/sites/default/files/ulez_ten_month_evaluation_report_23_april_2020.pdf
[15] https://www.london.gov.uk/what-we-do/environment/environment-publications/air-pollution-london-impact-environment-strategy
[16] www.imperial.ac.uk/news/213273/tackling-londons-pollution-will-increase-life/amp/
[17] https://www.blackstonechambers.com/news/inquest-death-ella-adoo-kissi-debrah/
[18] www.lancaster.ac.uk/staff/greencp/papers/CongestionChargeMar2015.pdf.
[19] https://www.centreforlondon.org/publication/road-user-charging/
[20] https://www.ipsos.com/ipsos-mori/en-uk/public-support-charging-motorists-use-roads-want-it-be-done-right-reasons
[21] https://tfl.gov.uk/modes/driving/scrappage-schemes
[22] https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/27/fact-sheet-president-biden-takes-executive-actions-to-tackle-the-climate-crisis-at-home-and-abroad-create-jobs-and-restore-scientific-integrity-across-federal-government/