Written evidence submitted by Siemens Mobility Limited (EVP0098)

1. EXECUTIVE SUMMARY

Siemens Mobility, as a leader in transport solutions, welcomes the government's commitment to both accelerate the shift to net zero and introduce road pricing due to the wide range of economic, social and environmental benefits this would bring to the UK. This submission constitutes our response to the call for evidence published in December 2020.

The key messages within our response are summarised below. We are keen to work with the government and industry to achieve these.

Zero Emission Vehicles

1. Air pollution kills 28,000 to 36,000 people in the UK each year and the government must continue to invest in Clean Air Zones across the UK, mandating such schemes for towns and cities with poor air quality.

2. Wider scrappage scheme for the most polluting vehicles, including a government subsidy to rollout Electric Vehicle (EV) charging infrastructure to the Strategic Road Network - with consideration given to modal interchange and charging hubs.

3. The government and industry must work closely together to introduce an accessible and low cost on-street residential charging network across the UK, allowing the 40% of people currently unable to charge at home the ability to do so.

4. The government must invest in and focus on rolling out strategic and reliable charging infrastructure across different market segments, including cars, vans and buses to fast-track the move to EV.

5. Focus on temporary-permanent innovative and greener off-grid solutions, such as hydrogen, to make rapid charging available across the UK road network, including Motorway Service Areas, in the quickest time possible.

Road pricing

1. Road user pricing must be convenient and accessible for all consumers and integrate seamlessly into their daily lives. The government should mandate the use of charging technology to integrate into consumer's mobile phones or vehicle on-board units to charge effectively.

2. ABOUT SIEMENS MOBILITY

2.1 Siemens Mobility has been a leader in transport solutions for more than 160 years and now employs 4,500 people in the UK. The organisation is constantly innovating its portfolio in its core areas of intelligent traffic systems, rolling stock, rail automation and electrification and turnkey systems and operates from around 70 locations across the UK.

2.2 Siemens Mobility Limited carries out a full range of transport-related activities in the UK. The company works with around 3,000 suppliers, 47 percent of them are UK based SMEs. Around 90% of spend is with UK based suppliers. This means the organisation is ideally placed to provide expert advice and input into matters affecting the transportation industry in the UK.

2.3 The Intelligent Traffic Systems (ITS) business of Siemens Mobility Limited employs approximately 950 people across the UK with its headquarters in Poole. The manufacturing plant in Poole is critical to the success of the UK and wider global business, being both the sole manufacturing location of products and solutions and a significant R&D hub (with more than 100 engineers developing new software, solutions and products for both the UK and export markets).

2.4 With its broad transport portfolio, market leading position and major UK presence backed up by the support of a global organisation, Siemens Mobility Limited has been, and continues to be, involved in many of the UK's major infrastructure projects/skills development initiatives.

2.5 The company's technology is at the heart of London's ultra-low emission and congestion charging zones where Siemens Mobility Limited software integrates with roadside sensors and Automatic Number Plate Recognition (ANPR) cameras. Such initiatives have had an immediate and dramatic impact on the standards of air quality and the company is leading on Clean Air Zone plans across many major UK towns and cities including, most recently, Birmingham and Portsmouth.

2.6 In partnership with some of the world's best manufacturers of electric vehicle charging units, Siemens Mobility Limited provides DC charging and AC charging to the public and private sector supported by our service and maintenance division. Every unit is tested and accredited with all compatible electric vehicles.

2.7 The company's Siemens eMobility Charging Infrastructure business partner is a market leader in the provision of EV charging infrastructure, with particular focus on urban installations. Following the completion of the UK's first Electric Avenue in 2020, the business continues to innovate and is launching a new generation of charging solutions in spring 2021, helping to deliver solutions that reduce emissions, improve air quality and provide support to customers in meeting their transport strategies and carbon emission reduction targets.

3. ACCELLERATING THE SHIFT TO ZERO EMISSION VEHICLES

3.1 Air Quality is the biggest environmental threat to human health in the UK with 28,000 to 36,000 deaths attributed to long-term exposure each year. This annual figure equates to 25% of the UK's current COVID-19 death toll in the UK.

3.2 With nationwide lockdowns and significant investment in place to protect human health during the pandemic, the government must do more to implement clean air strategies and reduce the significant number of lives lost each year due to poor air quality.

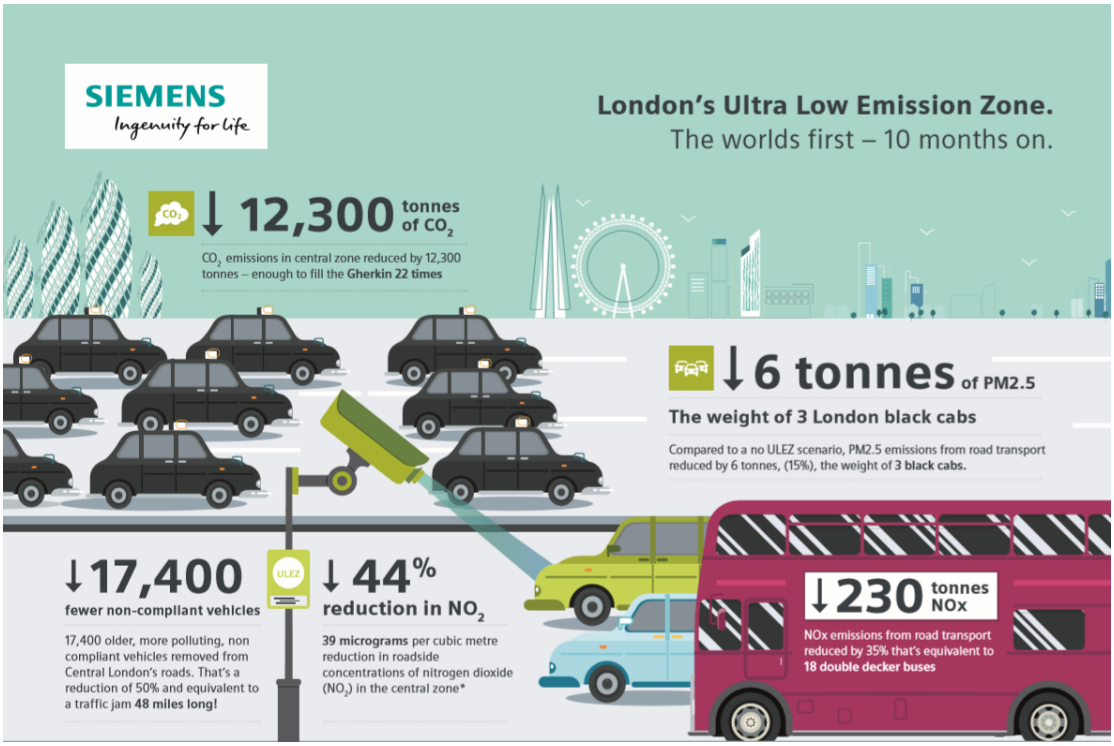
3.3 In the UK, road vehicles are proven to be the most polluting form of transport and published data tells us that despite national, regional and local lockdown measures in place throughout the last 11 months, the number of vehicles on our roads are almost at pre-lockdown levels, despite the UK being told to stay at home and leave for essential purposes only.

3.4 With the public turning to their cars to travel locally, it is vital that that government invests in cleaner and safer road transport.

3.5 Whilst towns and cities share many challenges, each is unique, and each has its own specific transportation and pollution issues. Furthermore, much of the policy and decision making and responsibility for specific outcomes is devolved to the Local Authority so inevitably there will be a need to recognise the role of place-based solutions.

3.6 Clean Air Zone (CAZ) solutions are proven to significantly reduce the volume of nitrogen oxides and particulates in the air. The system discourages the usage of older, higher-polluting vehicles in towns and cities across the UK. These systems are already at the heart of schemes in London, with the capital's low emission and congestion charging zones having proven their effectiveness for over a decade.

3.6.1 The infographic below shows the positive impact the Ultra-Low Emission Zone (ULEZ) in London has had on carbon and NOx emissions in the city in its first ten months of operation (Apr 19-Jan 20). This scheme was implemented by and is operated and maintained by Siemens Mobility for Transport for London (TfL).



3.7 Siemens Mobility research conducted in 2020 found that 64% of people believe their local area has a 'major problem' with air pollution and 57% of respondents said they

would support the introduction of a Clean Air Zone in their nearest town or city centre.

3.8 In the same study, at the height of the COVID-19 pandemic, 29% of respondents said a local CAZ would make them more likely to switch to an electric vehicle (EV).

3.8 With almost 3 in 10 people encouraged to switch to an electric vehicle as the result of a CAZ in their local area, there is evidently a requirement for the continued investment in local CAZ schemes across the UK to support the transition.

KEY RECOMMENDATION: The government must continue to invest in Clean Air Zone schemes across the UK, mandating such schemes for towns and cities with poor air quality.

3.9 A full Siemens Mobility report titled 'solutions to support a green road transport revolution' was shared with government in June 2020. A copy of this can be shared to provide further context if required.

3.10 The portfolio of electric vehicles is continually evolving with an estimated 100 models currently available in the UK. As a result of more options and the UK's scrappage scheme to incentivise consumers switch to EV, it is heavily anticipated that the cost of ownership will fall in this decade and the transition to EV will become much more realistic, affordable and appealing to consumers.

3.11 With low emission vehicle registrations already showing signs of increase each quarter (+137% in Q3 2020) a robust and reliable UK-wide charging network is now critical to ensure the supply of charging points is in line with the significantly increasing uptake.

3.12 Consumers now have the vehicles available to them, but we must consider how they use their vehicles, where they travel and their charging needs to strategically plan and deliver a UK-wide charging network.

3.12.1 A rapid and ultra-rapid charging network allows consumers to travel both local and great distances with minimal disruption to their daily life. Various charging systems can be installed depending on the likely length of stay so fast charging, rapid charging or ultra-rapid charging can charge from zero to 80% in 60, 30 or 15 minutes respectively. Standard outlet chargers can be supplied at locations where the dwell time is expected to be two hours+.

3.12.2 In partnership with some of the world's best manufacturers of electric vehicle charging units, Siemens Mobility provides DC charging and AC charging to the public and private sector supported by our service and maintenance division. Every unit is tested and accredited with all compatible electric vehicles.

KEY RECOMMENDATION: Wider scrappage scheme for the most polluting vehicles, including a government subsidy to rollout EV charging infrastructure to the Strategic Road Network – with consideration given to modal interchange and charging hubs.

3.13 At present, 40% of people with vehicles are unable to charge at home due to insufficient space for off-street charging.

3.14 In March 2020, Siemens worked closely with Westminster City Council and ubitricity to launch the UK's first fully converted lamppost charging street. Residents can now charge their electric vehicles at 24 lampposts along the street. The first of its kind, residents are now able to take advantage of an accessible, on-street charging network.

3.14.1 We are currently working with Transport for London and around 23 London Boroughs across the capital, providing EV charging solutions to meet their specific requirements. Our solutions include installation, commissioning, maintenance, and management of EV infrastructure.

3.14.2 To date, there are circa 2,500 new charging points across the capital and this partnership demonstrates a collaborative approach and shared endeavour to make EV charging accessible to every Londoner.

KEY RECOMMENDATION: The government and industry will need to work closely together to successfully determine a suitable on-street residential charging network across the entire UK that:

i. is of low cost to the consumer
ii. is accessible by all
iii. causes minimal impact to those residential areas where they are installed

3.15 Harnessing the power of public-private partnerships to invest in infrastructure is proven to help to deliver more projects, more quickly, particularly as public finances are currently constrained.

3.15.1 If the private sector is to continue with this investment, there must be a clear roadmap set out by the government on what will be deployed, where investment will be prioritised and when.

3.16 Reliable charging infrastructure on our road networks is critical to reduce the current range anxieties felt by consumers. At present, travelling a long distance in the UK via electric vehicle requires significant planning.

3.16.1 We must make sure those who are concerned about the next charging location, how long it will take to charge and whether that charging point is operational, have their fears and concerns significantly reduced due to an effective and efficient network covering all of our roads.

3.16.2 Until there is confidence in a comprehensive network, consumers will delay their move to EV, and as a result, broader plans to tackle carbon emissions will be pushed back even further.

3.17 Whilst being able to identify these EV charging point locations across the UK may seem relatively straightforward on the surface, it is well known that the energy grid and infrastructure will not be in place to support rapid charging until at least 2050.

KEY RECOMMENDATION: The government must invest and focus on rolling out strategic and reliable charging infrastructure across different market segments, including cars, vans, buses to fast-track the move to EV.

3.17.1 This presents an innovative opportunity for the government to look at greener and more sustainable off-grid solutions, which can be introduced over the next two decades to fill the void.

3.17.2 Hydrogen is a forward-thinking, alternative power supply that Siemens Mobility is already exploring across many transportation types including rail and road, here in the UK. It can be used both temporarily to deliver rapid and ultra-rapid EV charging as grid developments are made or as a long-term alternative energy source.

3.17.3 Agreeing the use of hydrogen as a short or long-term energy source will need to be determined by the cost implications of installing charging cables at key locations and the required ground works, which will need to be carefully evaluated to ensure a cost-effective and impactful charging network.

KEY RECOMMENDATION: Focus on temporary-permanent innovative and greener off-grid solutions, such as hydrogen, to make rapid charging available across the road network, including Motorway Service Areas, in the quickest time possible.

3.18 At Siemens Mobility we strongly believe the transition to EV by 2030 is achievable, providing the market is prepared and working towards the same outcome. The major outcome must be that charging infrastructure and networks:

I. are prioritised
II. can be invested in quickly
III. can guarantee sufficient usage
IV. have planned locations with UK-wide coverage
V. have a fair pricing strategy for consumers
VI. are regulated, with the government determining who will regulate the network to ensure long term success

4. ROAD PRICING

4.1 With published data demonstrating traffic levels returning to those of pre-lockdown, addressing air quality and the way we use our roads is critical.

4.2 The transition to EV is a positive step forward in reducing emissions caused by road transport and the environmental benefits of zero emissions vehicles will save thousands of lives each year.

4.3 Whilst our roads will become greener and safer, this will come at a cost to the economy. The £40 billion annual income received from Fuel Duty and Vehicle Excise Duty each year is set to decline rapidly as we approach 2030 and beyond. When comparing current government spend, the NHS budget is typically around £130 billion each year, so in comparison the £40 billion loss will create a significant gap in the UK economy that has to be addressed and identified elsewhere.

4.4 A national charging scheme across the UK's busiest road networks would help to ease congestion and traffic levels, due to consumers weighing up the value of their journey, but also ensure funding in replacement of VED.

4.5 With the government considering road pricing or pay-as-you-drive schemes as a potential solution, should this be taken forward, it must be carefully planned, executed and communicated to land well with the public.

4.6 Previously, such schemes have been met with hostility and are deemed to be 'another tax' placed on people by the government. The public must understand what the cost of road pricing is and the cost it simply replaces, not adds to.

4.7 Whilst consumers pay tax each time they fill their vehicle's fuel tank, this is a relatively hidden cost built into the price of fuel per litre. Any pay-as-you-drive or road pricing scheme must also fit seamlessly into the consumers' daily life.

4.8 Road user charging can be dynamic and accessible to all if managed effectively and invested in.

4.9 Siemens Mobility provides road user charging technology that connects with new and existing road infrastructure.

4.9.1 The technology operates using the consumer's mobile phone or the vehicle's on-board unit before integrating into the city's road user network, providing accurate data to operate a road pricing scheme.

4.9.2 The solution supports flexible payment schemes according to the distance travelled, type of vehicle, time of travel and current ambient pollution levels.

4.9.3 The data can also be gathered and shared in real-time, allowing cities to further optimise their traffic flows according to their specific and unique challenges, reducing congestion where needed and without the need to invest in additional hardware.

KEY RECOMMENDATION: Road user pricing must be convenient and accessible for all consumers and integrate seamlessly into their daily lives. The government should mandate the use of charging technology to integrate into consumer's mobile phones and vehicle on-board units to charge effectively.

4.10 We have proven evidence that demand management systems are effective when deployed appropriately including road user charging and taking a GPS approach with enforcement cameras. This can be shown through our work with TfL to operate the Ultra-Low Emission Zone.

4.10.1 The system is integrated with roadside sensors and ANPR cameras which form part of TfL's existing Congestion Charging scheme. ANPR cameras identify and register every vehicle that enters the ULEZ - 24 hours a day, 365 days a year. This information is then transmitted to a dedicated and secure Siemens Mobility data centre, where our ULEZ software determines the compliance of the vehicle. In its first

ten months, 17,400 non-compliant vehicles were removed from Central London's roads, equivalent to a traffic jam 48 miles long.

4.11 At Siemens Mobility, we believe that for the public to back road pricing, they must be aware of where their road user charging fee is being spent or reallocated and will be more receptive if the fee is going back into the local transportation sector or economy. Similar to the way in which a CAZ improves local air quality, road pricing must directly benefit them also.

KEY RECOMMENDATION: The money generated from road pricing must be put back into the local transportation sector and economy to provide sustainable alternatives to car usage and for local people to see the benefits of road pricing.

4.12 Many of our urban areas are heavily populated with additional land scarce to introduce new roads or infrastructure to help ease congestion. The government must look at a range of strategies to use the pavement that exists today in a more intelligent way.

4.12.1 With road space scarce and the public now expected to pay for that road space, the consumer will start to weigh up the value of their trip and chosen transportation method.

4.12.2 For example, if a parent is driving their child to a local school, they should expect to pay a smaller fee than someone driving into the city centre for work. They may also consider alternative transportation options such as bus, cycling, walking or rail.

4.12.3 To support this potential shift to alternative methods of transport, creating an inclusive and integrated mobility system for towns, cities and rural areas is of key importance, with a focus on the first and last mile of consumer journeys and ensuring these transportation methods are invested in and able to cope with new demand.

KEY RECOMMENDATION: The government must be prepared for an uptake in public transport and alternative transportation methods. The infrastructure and investment must be there to fund these services.

5. CONCLUSION

Siemens Mobility Limited are pleased to support the government with this inquiry and welcome the opportunity to provide oral evidence should this be required or of interest.

February 2021