

Written evidence submitted by Magway Ltd (RDF0024)

1. Executive summary

- 1.1. Road transport is the largest emitting sector of greenhouse gas (GHG) emissions, producing 27% of the UK's total emissions in 2019¹. Around 35% of these emissions come from commercial light goods vehicles (LGVs), such as small delivery vehicles and vans, and heavy goods vehicles (HGVs).
- 1.2. The explosive growth in online shopping, exacerbated by the COVID-19 pandemic which has seen a 33% increase in parcel volumes, and the increased demand for smaller, more frequent collections and deliveries to homes and companies, has outpaced the development of delivery methods and the underlying infrastructure supporting it. A change is urgently needed to address the negative environmental impact caused by the ever-increasing volume of goods vehicles currently relied upon to meet this growth in demand.
- 1.3. Current solutions, which rely heavily on the electrification of existing models, are not enough. Reaching Net Zero and decarbonising the road freight supply chain will require the UK to take big bets on innovative and sustainable solutions that cut emissions (including particulates from tyres on road), as well as improve efficiency and road safety.
- 1.4. Magway is an electric, zero-emission, high-capacity delivery system that improves air quality and congestion by removing a significant number of the delivery vans from UK roads. In fact, the Magway system can take 90% of online delivery vehicles off the roads and has the potential to connect urban areas, shipping terminals, distribution centres, and airports.
- 1.5. Magway's solution provides enormous possibilities for decarbonising road freight in the UK, offering a sustainable and innovative alternative to traditional commercial goods vehicles. And by decarbonising road freight, Magway will also help solve some of the UK's most pressing public policy challenges, such as achieving Net

Zero, improving air quality, reducing congestion and road fatalities and future-proofing the UK's supply chain infrastructure.

2. About Magway

- 2.1. Magway is an electric, zero-emission, high-capacity delivery system operating through a secure pipe-based network. The Magway system can replace commercial road vehicles, decarbonising road freight, reducing congestion, increasing logistics capacity and improving supply chain resilience and efficiency.
- 2.2. Magway was founded in the UK in 2017 and is co-funded by Innovate UK through the 'Emerging and Enabling Technologies' competition.
- 2.3. Magway can significantly increase the UK's logistics capacity. It is able to deliver goods more reliably, with greater predictability and at a reduced cost, thus providing added resilience to the UK's supply chains. This offers a zero-emissions alternative to HGV and LGV transportation, both on public roads and also on sites such as airports and ports.

3. The problem

- 3.1. The explosive growth in online shopping means that consumer demand is shifting towards e-commerce and home delivery. This is creating a capacity issue. In the next five years, UK parcel volumes from online shopping alone are predicted to double, rising to six billion per annum. Internationally, this number is 200 billion per annum.
- 3.2. This increasing demand for small deliveries, direct to people's homes, around the clock, comes at a high cost to the environment. Current urban freight transport models bring the negative externalities of emissions, pollution, noise, congestion, and habitat loss.
- 3.3. In 2019, HGVs alone accounted for more than 16% of the UK's transport emissions², despite making up only 1% of UK road vehicles. According to the Department for Transport's road traffic forecasts, HGV traffic will grow by 8% by 2050, which risks emissions from the sector growing.³ Similarly, light vans accounted for 16% of domestic GHG emissions in the same year.⁴ A change is urgently needed to

address the negative environmental impact from the ever-increasing volume of goods vehicles on UK roads.

- 3.4. Electrifying existing modes of road freight is not enough. Aside from the most widely acknowledged barriers to electrifying the freight sector, including the high cost of electric batteries, long battery recharging times and the lack of public charging infrastructure, electrification does not solve other pressing policy challenges such as road congestion and road traffic deaths.
- 3.5. Road traffic congestion in central London alone has risen by between 17% and 31% since 2009⁵. Replacing traditional delivery vehicles with electric alternatives does not deal with the problems posed by the number of vehicles on British roads. Equally, HGVs are involved in over 50% of all motorway fatalities in the UK per year, despite accounting for only 1% of UK road vehicles. It is unlikely that electric alternatives will be less prone to traffic accidents.
- 3.6. Decarbonising road freight on the journey to Net Zero will require more than just electrifying existing modes of road freight. The UK should take big bets on solutions that reduce carbon emissions and solve other problems including congestion, road safety, and supply chain resilience.

4. Magway's solution

- 4.1. Magway's system is an electric, zero-emission, high-capacity delivery system that can be powered using renewable energy, thus offering significant scope to reduce the CO₂ emissions generated by commercial delivery vehicles that currently dominate road freight.
- 4.2. Using electric powered linear synchronous motor and control technology mounted on a single track, totes carrying freight are moved at high speeds of up to 54km/hr through a secure and unobtrusive network of overground or underground utility pipes which are one meter in diameter. These networks have the potential to connect cities, towns, and communities as well as link shipping terminals, distribution centres, airports, and urban areas.

- 4.3. Opportunities for road freight decarbonisation will also arise from the greater emphasis on resilient supply chains, especially in the aftermath of the COVID-19 pandemic. Faster digitalisation and automation is the key to optimising logistics and reducing its carbon intensity.
- 4.4. Magway's technology bolsters supply chains through automation. Within the boundaries of a port or airport, Magway can aid the automation of breaking down bulk deliveries for the individual routing of goods and automated reassembly of load at a destination.
- 4.5. Magway's underground system can deliver parcels in a matter of hours and our smart infrastructure ensures parcels are completely trackable every step of the way, allowing precisely timed deliveries and optimal flexibility should deliveries need to be rescheduled. Magway also offers a temperature-controlled supply chain, which is essential for transporting cargo such as fresh food and medicines. This empowers businesses with greater certainty of production, distribution, and sale. This in turn boosts productivity.
- 4.6. In the context of declining numbers of HGV drivers, Magway's driverless technology can provide additional capacity that is less exposed to fluctuations in the labour market.
- 4.7. Magway's high-capacity delivery system is able to dispatch an HGV worth of goods every thirty seconds and a single two-way system has a capacity equivalent to 40,000 HGV journeys a week. This relieves capacity pressure on our roads by replacing polluting vehicles with an automated and discrete system away from view.
- 4.8. Magway has engaged Royal Mail in conversations on parcel delivery and has confirmed that the system is suitable for transporting the majority of Royal Mail parcels. Royal Mail currently handles over half of the UK's international parcel volume.
- 4.9. Magway has been generating revenue from its first commercial agreement since the end of Q1 2021 and is on track to commence the installation of a commercial system on the client site in 2022/23.

4.10. Magway is also significantly cheaper than alternatives. Where a new motorway costs £18.6 million per kilometre, Magway's major transport and freight infrastructure costs no more than £2 million per kilometre in a rural area and no more than £8 million per kilometre for two-lane urban systems.

5. Next steps

5.1. Magway's smart infrastructure has huge potential to help the freight industry decarbonise, reducing emissions while also combating congestion and supply chain challenges. But we cannot do it alone.

5.2. Robust frameworks, regulation, and opportunities are needed so that innovative solutions like Magway can be applied in commercial contexts. Getting these right will require close cooperation between the Government and industry. To realise Magway's potential to decarbonise the road freight supply chain, it will be imperative for the Government to consider how funding can best be allocated to drive innovation in green transport technologies, to actively explore transport decarbonisation solutions not limited to the simple electrification of existing models, and to facilitate rights-of-way for sustainable infrastructure projects like Magway's.

5.3. As with successfully tackling the COVID-19 pandemic, there is a significant role for private technology companies, like Magway, to play in advising and assisting the Government in its policies. As the Government looks to decarbonise the road freight supply chain, close consultation with relevant businesses will ensure that the most innovative and sustainable solutions are accounted for.

5.4. We appreciate the opportunity to submit evidence to the Transport Select Committee and will happily expand on Magway's solution as is helpful for the Committee.

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Endnotes

¹ Department for Transport, 'Transport and environment statistics: Autumn 2021', October 2021

² Department for Transport, 'Decarbonising Transport: A Better, Greener Britain', 2021

³ Department for Transport, 'Consultation on when to phase out the sale of new, non-zero emission heavy goods vehicles', 2021

⁴ Department for Transport, 'Decarbonising Transport: A Better, Greener Britain', 2021

⁵ Government Office for Science, 'Future of Mobility: last mile urban freight in the UK: how and why is it changing', 2019