Written evidence from Magway Limited

1. Executive summary

1.1. The UK has a legally binding commitment to achieve Net Zero by 2050. This is an enormous challenge that requires a complete shift across many industries. Urgent measures are needed in sectors such as aviation and shipping, and the Government must consider the availability of new technologies to provide solutions that support a rapid transition.

1.2. Airports and ports form the foundation of the aviation and shipping industries. Emission sources at airports and ports include ships and planes docked at the terminal, fuel used in cargo-handling equipment, and the various forms of transportation, particularly trucks, that intersect at the ports and airports to move goods around the site and ultimately on to their destination. To date, there has been limited action to reduce the direct emissions from these hubs.

1.3. UK ports and airports are key parts of the UK's supply chain infrastructure. It is vital to acknowledge the interface between onward freight networks and ports and airports when looking for solutions to facilitate transport decarbonisation.

1.4. Magway is a British business that has designed and tested an electric, zero emissions logistics system that provides an alternative to the traditional commercial vehicles used for on ground operations at ports and airports.

1.5. As a high-capacity delivery system, Magway has the potential to offer a clean solution to the movement of goods within the UK's supply chain infrastructure. Eliminating delivery vans and HGVs on highways and urban areas reduces congestion and pollution.

1.6. Magway has already spoken to a number of ports in the UK and internationally and is supporting the Port of Dover in the development of their thinking. In discussions with the Port of Dover, Magway has demonstrated how its system can enable efficiencies and development opportunities.

2. About Magway

2.1. Magway is an electric, zero emissions, high-capacity delivery system operating through a secure pipe-based network. The Magway system can replace commercial road vehicles, reducing congestion, increasing logistics capacity and improving air quality.

2.2. Magway was founded in the UK in 2017 and is co-funded by Innovate UK through both 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. Emissions at ports and airports

3.1. Ports' and airports' emissions represent a small but material share of emissions from the aviation and shipping sectors and therefore have a part to play in decarbonising these sectors. As major interconnection points in their respective transport networks and as logistic hubs, airports and ports have great potential to contribute to the transition towards net zero aviation and shipping.

3.2. While the discussion around decarbonising the aviation and shipping sectors has, to date, focussed on improvements in vessel and fleet efficiency and the use of zero-carbon fuels, limited action has been taken to reduce the direct emissions from airports and ports, which ignores the critical role ground operations have to play in decarbonising the aviation and shipping sectors.

3.3. Emission sources from operations within an airport or port's boundaries currently include ships and planes docked at the terminal, fuel used in cargo-handling equipment, and the various forms of transportation, particularly HGVs and vans, that intersect at the ports and airports to move goods around the site and ultimately to their destination.

3.4. Operations at the Port of London Authority alone generate some 2,000 tonnes of carbon every year. Petrol and diesel vehicles transferring cargo around the site account for a portion of these emissions.

3.5. Moving goods around the UK is the backbone of the economy and ports and airports are, and will continue to be, a crucial part of the UK's supply chain infrastructure and the key link between different modes of freight transport.

3.6. The expected growth in world trade driven by changing consumer demand towards home delivery and e-commerce will inevitably lead to growth in global sea and air freight, meaning more cargo will be handled in ports and airports. This cargo will then be transported onwards, a process which currently relies on polluting commercial vehicles. 23.5% of the UK's CO2 is emitted directly from road transport, of which a third is from commercial vehicles.

3.7. To be able to cope with this future growth, the quality and capacity of transport systems between airports and ports and the rest of the UK's supply chain should be high. The challenge will be to accommodate this increased transport volume while minimising or eliminating the environmental footprint of the transport.

3.8. The solution for reducing the emissions of activities at ports and airports cannot focus on fleet efficiency alone. Solutions also lie in engaging new methods and technologies to improve ground operations. This could involve zero emission versions of existing technologies such as electric vehicles for the transportation of goods. Additionally, entirely new and imaginative solutions should be considered to support ports and airports in their move towards net zero emissions.

4. Magway's Technology

4.1. Magway's system is electric, zero emission and can be powered using renewable energy, thus offering significant scope to reduce the CO2 emissions generated by commercial vehicles currently relied upon by on ground port and airport operations and the UK's wider supply chain.

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 could connect shipping terminals, distribution centres, airports and urban areas.

4.3. Within an airport's or port's boundaries, Magway can aid the automation of breaking down bulk deliveries for the individual routing of goods and automated reassembly of load at a destination. On top of this, the system supports a distributed manufacturing capability by ensuring certain and proven delivery of goods.

4.4. Magway's high capacity delivery system is able to dispatch an HGV worth of goods every thirty seconds and a single system has the capacity equivalent to 40,000 HGV journeys a week. This relieves capacity pressure on our roads by replacing the polluting vehicles with an automated and discrete system away from view.

4.5. Therefore Magway provides the opportunity not only to expand the UK's supply chain capacity, but also contribute to the low carbon backbone of operations at ports and airports.

4.6. Magway has already commenced conversations with a number of ports in the UK and internationally about the benefits of the system as well as with technology providers who enable warehouse automation. Magway is currently supporting the Port of Dover in the development of their thinking.

4.7. Similarly, 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, amounting to over 200 million parcels that move through Heathrow Airport each year.

4.8. Magway has been generating revenue from its first commercial contract since the end of Q1 2021 and is on track to commence installation of a commercial system on the client site in 2022.

5. Next steps

5.1. The aviation and shipping industries contribute significantly to the UK's greenhouse gas emissions. Up until now, the conversation around decarbonising these sectors has largely focused on the role of alternative fuels for aircrafts and ships.

5.2. It is essential that we do not miss the opportunity to decarbonise on ground operations at ports and airports, which are and will continue to be, a key link between different modes of freight transport. These hubs are uniquely positioned to help facilitate and drive forward wider transport decarbonisation in the aviation and shipping sectors.

5.3. The Government is due to publish its Net Zero Strategy ahead of COP26, outlining short and mid-term, sector-specific decarbonisation targets aligned with the long-term Net Zero goal. When assessing decarbonisation in the shipping

and aviation sectors, the Government must mention and support new and innovative technological solutions to improve ground operations at ports and airports.

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