Report
May 2022

Walking Freight Feasibility Study

Image credit: Alwyn Ladell

Cross River Partnership
Our ref: 24177601

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About this report

Cross River Partnership

Cross River Partnership (CRP) is a partnership delivering environmental, economic and community-focused projects. We support public, private and voluntary organisations to address creatively challenges around Air Quality, Transport, Placemaking and Wellbeing.

CRP's vision is to address sustainability challenges collaboratively in London and beyond. As a testbed for exciting projects in towns and cities, we will share knowledge, evidence, and best practice for the people who live, work and visit these places.

Clean Air Villages 4

CRP's Clean Air Villages 4 (CAV4) project is a Defra-funded project led by Westminster City Council. CRP is working with 26 project partners to improve air quality across different London 'villages', where both air pollution and population density levels are high. These locations reflect the Greater London Authority's Air Quality Focus Areas. The CAV4 freight solutions implemented incorporate Consolidation, Distribution, Mode, Technology and Policy.

The CAV4 project partners are the London Boroughs of Barnet, Brent, Hammersmith & Fulham, Islington, Lambeth, Lewisham, Merton, Richmond upon Thames, Royal Borough of Kensington & Chelsea, Southwark, and Wandsworth, as well as Kent Count Council and Westminster City Council, and Business Improvement Districts (BIDs) angel.London, Better Bankside, Camden Town Unlimited, Central District Alliance, The Fitzrovia Partnership, Hammersmith BID, Northbank BID, South Bank BID, Team London Bridge, Victoria BID and Victoria Westminster BID, in addition to landowner Cadogan Estates and strategic partner the Port of London Authority (PLA).

Executive Summary

Walking freight is a mode of logistics where foot-based porters play a key role in deliveries and collections. This model has significant potential to expand within London, as it has advantages over other logistics modes which make it an efficient and commercially viable choice in specific circumstances.

Cross River Partnership has identified and consolidated different operational approaches involving walking freight into the following three typologies:

- A traditional model where walking freight supports unconsolidated, van-based deliveries
- Direct business-to-consumer deliveries
- A consolidation-based model, where walking freight acts as the 'final mile' mode of delivery from a consolidation hub

Goods most suited to walking freight delivery are small consumer goods and personal deliveries. These goods comprise a substantial proportion of the overall volume of packages delivered by major operators.

Walking freight has high potential to serve the densest areas of the city in particular, such as the Central Activities Zone (CAZ), Croydon, and the Isle of Dogs.

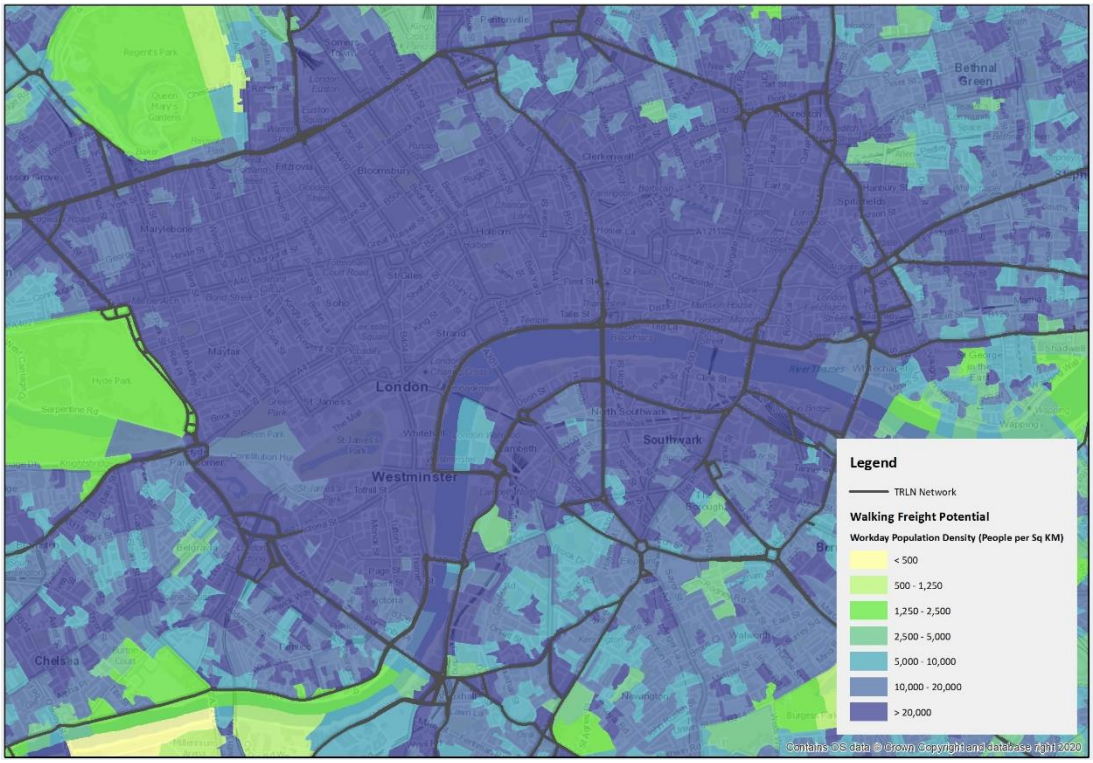

Figure 1-1: Estimated workday population density showing the CAZ as the densest area in London

Walking freight has the potential to generate benefits for London, mainly due to reductions in vehicle distances travelled (from substituting trips usually made by van with trips made on foot, by pedestrian porters). Overall kilometres travelled by light goods vehicles (LGVs) could be reduced by up to 0.4% across Greater London (i.e. one in every 250 kilometres) if walking freight was expanded to its full potential in the **CAZ**.

This reduction will have positive impacts on carbon emissions. It is estimated that this reduction in vehicle distance travelled would reduce carbon emissions by 4.7 kilotonnes per year. It would also generate health benefits for Londoners from improved air pollution, reduced noise pollution, reduced road danger for pedestrians and cyclists, and improved health from increasing walking.

The economic benefits of walking freight are estimated to be at least £37 million per year to London's economy, arising from:

- decongestion;
- decarbonisation;
- improved air pollution;
- improved noise pollution;
- reduced road danger, and
- reduced road wear.

These economic benefits do not account for wider economic impacts which would arise as a result of decongestion impact. Therefore, the benefits calculation of £37 million per year should be considered a conservative estimate.

Current technological regulations are a constraint on growth for the sector. Limitations on the legal use of power-assisted trolleys on public land prevent porters from carrying high volumes of goods on foot. Until this high barrier to expansion is resolved, it is likely that the use of walking freight in London will not 'take off' in the same way that it has done in other European capital cities to date. Making the case to government to reform these laws will be key to enabling walking freight expansion in the city.

Extremely high demand for, and limited supply of, logistics land close to central London is a key constraint on the feasibility of establishing consolidation hubs which could enable walking freight operations in the **CAZ**, and other suitable areas of London. Ensuring logistics land is safeguarded and expanded through development planning is essential to providing the right environment for operators to expand walking freight and consolidation operations.

Our recommendations for next steps for improving the viability of walking freight are:

- Enhancing planning policy and skills with regard to freight planning and increasing logistics land available;
- Reforming electric-assist regulations governing trolleys and electric-assisted equipment for use on the public highway;
- Developing and showcasing the walking freight market, including establishing a trial walking freight logistics hub, and
- Deliver fully accessible highways and pavements.

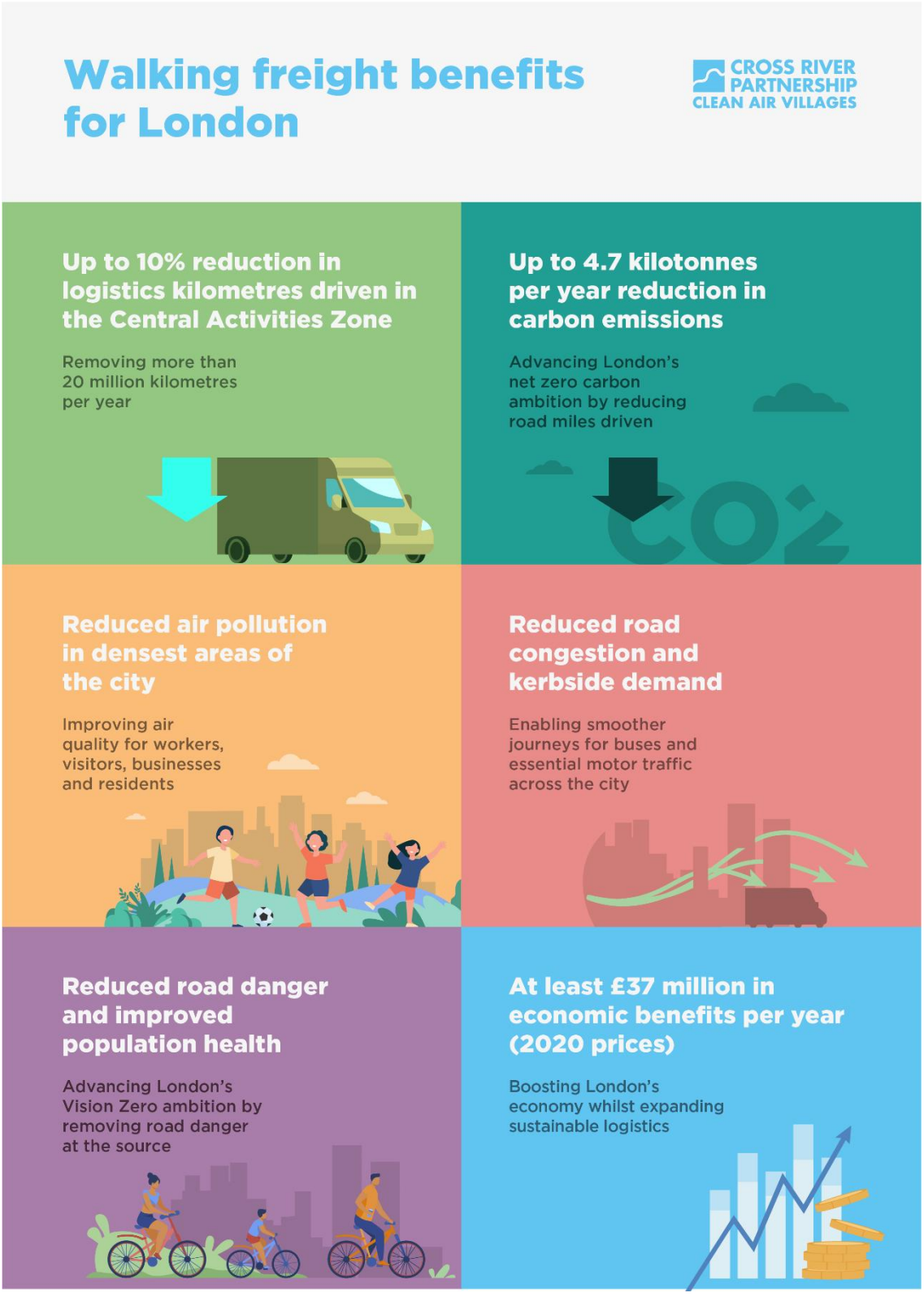

Figure 1-2: The benefits of walking freight to London

Figure 1-3: Unlocking walking freight in London

1 Introduction

1.1 Walking freight is a logistics model which is well placed to complement vehicle-based logistics. In London, walking freight plays a limited but growing role in last mile logistics, with significant potential for expansion. It has several advantages over other transport modes, which make it an efficient choice in specific circumstances.

1.2 Cross River Partnership (CRP) commissioned this research to understand the feasibility of different walking freight models and to ascertain the value of this relatively untapped mode of logistics within London.

Our approach

1.3 This report was developed by conducting research into the existing market for walking freight operations and technologies within the UK and abroad. Our work included reviewing academic research examining freight consolidation, existing trial operations from logistics providers, and freight planning research from **Transport for London (TfL)**.

1.4 We also conducted technical analysis to ascertain geographies best suited to walking freight, as well as calculations estimating the potential benefits generated through expanding walking freight in the city.

1.5 To inform our work, we approached several logistics operators to understand their existing trial operations involving walking freight and consolidation in urban areas, barriers to potentially expanding those operations, and the role new technology will play in enabling that expansion. We engaged several operators of varying sizes, all operating within the whole of Greater London:

- **Amazon**
- **Charrli**
- **DPD**
- **Evri (formerly Hermes)**
- **Getir**
- **UPS**
- **Urb-it**

1.6 We also had one to one engagement with TfL and the **London Borough of Southwark** from the public sector.

Structure of this report

1.7 The structure of this report explains walking freight and examines its feasibility, bringing together input from research, operator engagement, and technical analysis. Our report is structured as follows:

- providing an overview of walking freight, its typologies, equipment used, and existing operations, in Chapter 2;
- examining the benefits of walking freight, including carbon emission savings, health impacts, and economic impacts from reducing vehicle kilometres travelled, in Chapter 3;
- examining the market areas and geographies in London best suited to being served by walking freight, as well as barriers to expansion of the mode, in Chapter 4, and
- making recommendations to the public and private sector to enable an expansion of walking freight, in Chapter 5.

2 What is walking freight?

2.1 This section gives an overview of the following aspects of walking freight as a logistics mode:

- walking freight definition and typologies;
- walking freight operational case studies in London and other cities; and
- equipment employed in walking freight operations.

Definition

2.2 Walking freight can be defined as:

> A mode of logistics where foot-based porters play a key role in deliveries and collections.

2.3 Within the scope of this definition, CRP has identified and consolidated different operational approaches involving walking freight into the following three typologies:

- A traditional model where walking freight supports unconsolidated, van-based deliveries.
- Direct business-to-consumer deliveries (where the whole delivery journey is made by a courier on foot).
- A consolidation-based model, where walking freight acts as the 'final mile' from a consolidation hub.

2.4 Each of these typologies has different uses and feasibility according to customer needs.

2.5 Certain goods are more suitable for delivery by walking freight than others. Our operator engagement and research indicated that letters, as well as small consumer goods and personal deliveries, are well suited to being transported on foot as they are light and small, easily handled by porters. Large goods, such as furniture and large household goods, as well as heavy goods such as food or milk, are not well suited for delivery on foot.

Walking freight typologies

Traditional van-based multi-drop deliveries

2.6 This model has developed to support vehicle-based deliveries. Drivers park their vehicles for a length of time at the roadside while they make deliveries within the local area (such as a cluster of neighbouring addresses) on foot. The length of time the vehicle is parked could range from couple of minutes to half an hour, depending on the situation.

Figure 2-1: Traditional model of walking freight

2.7 Modern courier services (including **Royal Mail**) employ this model widely. Our operator engagement indicated that their drivers walk substantial distances over the course of a shift. It is estimated that the average delivery van is stationary for more than 60% of daily tour times, and van-based couriers walk up to 12km on foot each day (**Allen et al. 2018**).

Vehicle access restrictions and lack of plentiful and reliable loading bays already incentivise operators to park their vehicles for extended periods within close walking distance of groups of addresses, making the final leg of the journey on foot.

2.8 This mode of walking freight is notable for:

- **Ubiquity** – most operators employ this model as complementary aspect to van-based logistics, which suggests it is effective at saving time and resources. Drivers would consider walking short distances from their vehicle to be a usual part of their work routine.
- **Ease of operation** – logistics operators using this model have developed sorting processes which allow for quick distribution of consignments in this way. Vans would be loaded with parcels in a particular order where neighbouring delivery addresses are packed close together, so that drivers can quickly select and bundle parcels at the roadside and walk the short distance to their final address. In some cases, parcels would be finely pre-sorted into consignments, so drivers can very quickly select which parcels need to be carried to an address cluster.

2.9 In dense urban areas, this walking freight typology is particularly ubiquitous, owing to the high density of addresses. Operators indicated to us that vehicle access restrictions, and lack of plentiful and reliable loading bays, further incentivise operators to park their vehicles for extended periods within close walking distance of groups of addresses.

2.10 The final leg of the journey from the parked vehicle to the address post box, front door, or servicing access typically ranges from 20 metres to 200-300 metres. Drivers are often given small, wheeled trolleys or shoulder-slung bags to carry consignments from the back of their van to the doorstep of premises close to where they have parked.

Case studies and equipment employed

2.11 This model is a mature, tried and tested model for walking freight. Most operators employ this mode as an ordinary supporting feature of van-based logistics models. Consignments with a specific focus on delivery speed (such as a motorcycle or bicycle courier) would travel directly to one specific address at a time, but van-based consignments carrying multiple parcels per delivery round are complemented by this model.

2.12 A variety of equipment can be used to enable this approach. Shoulder slung bags and trolleys of various sizes are employed to maximise the carrying capacity of a driver per 'stop' on a van-based delivery round. Wheeled trolleys have higher capacity than shoulder-slung bags but are less flexible for carrying goods into restricted access areas and up steps. Royal Mail, for example, employs a range of equipment to aid drivers making deliveries on foot. DPD also indicated to us that their drivers usually carry a foldable trolley in their van.

Figure 2-2: Royal Mail 20 litre shoulder-slung bags

Figure 2-3: Royal Mail two-wheeled foldable trolley

Image credit: Wikimedia commons

2.13 Royal Mail also employ a notable variant of this logistics model. On many streets across the UK, Royal Mail have permanently secured large trolleys to lampposts or other street infrastructure with a chain lock. Their drivers will park their van beside this trolley, transfer relevant parcels to that trolley in a pre-sorted order, and then unlock the chain and walk the trolley down the street to target addresses. Drivers would then return the trolley to its usual position once they have completed all deliveries on that street and lock it back up for use again the next day, possibly by a different Royal Mail driver.

2.14 This model is suitable for Royal Mail because they typically deliver once per day. When the van driver arrives in a street, they can offload all deliveries for that street into the large trolley. These trolleys are particularly common in urban areas, which indicates that they are commercially beneficial to Royal Mail's business model.

Figure 2-4: Four wheeled 360 litre lockable Royal Mail trolley

Business-to-consumer deliveries

2.15 Small businesses, based close to their customers, employ this model of walking freight to deliver their products. This typology is the most decentralised walking freight model, as it does not necessarily involve a logistics operator.

Figure 2-5: Business-to-consumer model of walking freight

2.16 This model is heavily decentralised, benefitting small businesses. Business types employing this typically have local customer bases, such as florists and cake-decorators.

2.17 This mode is most viable in dense geographies within close walking distance of businesses, where customer service is highly valued. For many business types, this mode may be commercially unjustifiable, given that many customers could walk themselves to a store front instead of having staff walk goods to customer addresses. Engaging directly with customers face to face, and building positive reputations locally, are key factors in determining the viability of this mode for local businesses.

Case studies

2.18 This mode is best suited to direct business to consumer deliveries. Some commercial operators had established a foothold in the market, but our engagement work revealed that the scalability of the model is limited, and profitability is challenging to achieve. Charrli and Urb-it, both small logistics operators in London, indicated that although much of their initial growth came from serving this market, they have since dialled back their walking freight operations due to the challenges of scaling up business to consumer deliveries on foot while remaining profitable.

2.19 Urb-it indicated they have exited the business-to-consumer market entirely and are focused instead on growing volumes in parcel delivery and e-commerce. Urb-it indicated that moving away from walking freight was commercially savvy, since their porters could carry only up to 15 parcels at a time, in comparison to cargo bike riders who could carry up to 60 parcels. For this reason, we understand there are no commercial operators employing walking freight in London in the business-to-consumer space at present.

2.20 Our research has however identified international examples of direct business to consumer deliveries, on a limited scale. In Tokyo, an extremely dense city, Uber have **experimented with final mile hot food deliveries on foot**. Similarly in Seoul, another dense city, grocery shops have **experimented with deliveries made on foot**, where small grocery orders were delivered

from the store to consumers within a one kilometre radius. Nonetheless, this typology is limited by its low carrying capacity.

Consolidation-based deliveries

2.21 The final typology of walking freight is the one with the most potential to grow and play a role in expanding the scope of sustainable logistics operations. It remains relatively untapped and has attracted interest in recent years from operators and the public sector.

2.22 In this model, operators would employ the use of a consolidation site to transfer goods from vehicle to porter, close to clusters of delivery addresses. Porters then make 'final mile' deliveries to customers on foot. This mode is uniquely suited to very dense urban areas, where high concentrations of delivery addresses offset the additional costs associated with 'double heading' inbound deliveries (i.e. where a delivery is made by a chain of two modes of transport, rather than one).

2.23 Operators would employ vans or lorries to transport goods into their consolidation site, where its contents would then be unloaded and distributed amongst a team of porters on foot for onward delivery. The vehicle would then either return to a depot site outside the target area to collect a further batch of goods, or would make a delivery round containing only heavier / larger items which cannot be carried by the team of porters.

Consolidation-based walking freight is a relatively untapped market and has strong growth potential.

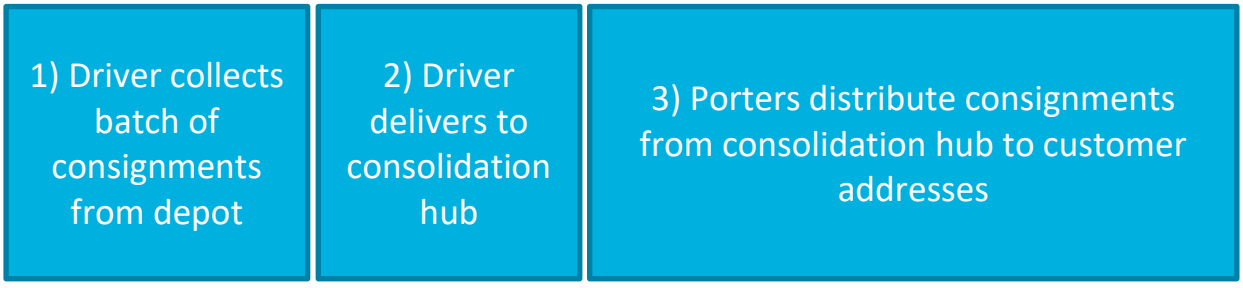

Figure 2-6: Hub-based model of walking freight

2.24 Consolidation hubs are not a new development in freight planning and operator commercial strategies. For several years, operators have experimented with consolidation hubs to transfer consignments into 'the right vehicle for the right place'. These operations have typically focused on electric vans and cargo bicycles – in London for example, consolidation sites are operated by **Amazon**, and **Zedify**, in the City of London. DPD indicated to us they operate a small site in Westminster, and Urb-it in Waterloo.

2.25 Within these consolidation sites, walking freight remains relatively untapped. Some operators have conducted trials in London and across Europe to ascertain the feasibility of employing walking freight as a component of 'final mile' logistics from a consolidation site, indicating a clear private sector interest in understanding the mode in greater detail.

Self-service deliveries

2.26 A variant of this model includes 'self-service' walking freight deliveries, where customers collect directly from a local logistics hub, such as from an **Amazon locker**. These must have good security and be located conveniently for customers to walk to, such as at train / tube stations or local shops.

2.27 For 'self-service' deliveries, there is a trade-off between benefits to the service provider (time saved not delivering to customer addresses) and disbenefits to the customer (time required to collect from local hub). However, it may suit customers unavailable to receive deliveries at their home address (e.g. if they are away from home during the working day), and it is often cheaper than home delivery.

2.28 The carbon and air quality impacts of the end user picking up their package at a logistics hub are mixed. Although this model reduces the need for operator vehicles to drive door to door delivering packages, consumers may offset these savings if they choose to drive to the logistics hub to collect their package.

Case studies

2.29 Our operator engagement identified that currently some firms do employ this type of walking freight as a 'final mile' solution, including in Paris and Berlin, in the following ways:

- **Formal hub space:** operators employ a consolidation hub in an urban area which receives a large van or lorry. This is unloaded, and then parcels are distributed out to porters and/or cargo bikes. This space could be in the basement of a building, a railway arch, or a large secure container in a public place.
- **Informal hub space:** operators employ a large van or lorry as an "informal" or "micro" hub space in a public location. Its contents are unloaded on-street and distributed to porters and/or cargo bikes, before the vehicle departs.
- **Supporting role:** operators employ a traditional van-based model, but drivers are met on-street at various times by porters on foot, who take a consignment away from the van on foot and return an empty bag / container to the van at the same time. This could happen several times per day. UPS said this method is employed frequently in Berlin, for example.

2.30 DPD did indicate that their UK business was focused less on cargo bikes and walking freight, and more on electrifying their van fleet, whilst also ensuring depots were sited close to target markets across the UK. Although this strategy involved establishing more local depots, onward deliveries are made by van only rather than cargo bike or porter. DPD also indicated that acquiring consolidation space in London which might enable more cargo bikes and walking freight was not commercially viable, due to the very high rents required.

2.31 Some operators however have conducted trials in recent years to ascertain the value of walking freight models, ascertaining its role within the existing balance of operating costs with time-efficiency and sustainability. We have identified the following case studies employing either formal or informal logistics hubs to enable walking freight to deliver goods the 'final mile':

- **Gnewt Cargo, London (2019)** – Gnewt Cargo (now owned by **Menzies**) conducted a consolidated walking freight trial using a formal hub space under a railway arch in central London in 2019. Two trials were conducted, in the South Bank and City of London areas. Transport for London played a role **funding this trial** as a 'freight consolidation demonstrator'.
- **Evri, London (2021)** – Evri conducted a **trial** in Kennington in 2021, utilising an informal hub space on street. Large vans were used to supply parcels to teams of porters on foot. This trial was supported by software developed by Ford.
- **UPS, Dublin (2020) –** UPS conducted a **trial** using a formal hub space in the form of a secure, lockable container in a public space in the centre of the city. This employed a range of micro vehicles such as cargo bikes, electric quadracycles, and porters on foot harnessing power-assisted trolleys, developed by **Fernhay**.

2.32 Evri and UPS indicated in our engagement that they were considering expanding their trials. UPS indicated they are currently developing a walking freight trial in London, employing a similar model that they had used in Dublin. Evri also indicated high interest in launching further trials of sustainable consolidation, both within London and in other cities such as Leeds and York.

2.33 Evri also indicated that they are investigating whether it may be viable to employ informal consolidation space in underutilised city centre spaces, such as coach parks, to use as a lockup for cargo bikes and walking trolleys.

2.34 Although we spoke to a range of logistics operators, our reach was not exhaustive. Operators we did engage with highlighted these models as their main consolidated walking freight operations, but it is possible that other variants of this mode may be underway in certain geographies beyond the reach of our engagement exercise.

Equipment employed

2.35 Operators employed a range of equipment to deliver their trial walking freight consolidation operations. Gnewt Cargo employed 140 litre sports holdalls with two wheels for their 2019 trial, similar to the bags Evri used in 2021. Gnewt Cargo determined that workers could safely carry no more than 25 kilograms of parcels per delivery round with this equipment.

2.36 In Dublin however, UPS employed a power-assisted trolley developed by Fernhay, which had an outsized 2000 litre carrying capacity and was able to haul up to 200 kilograms of payload. The capacity of power-assisted trolleys, walked by porters along pavements or roadways, enables a step change in the volume and weight carried by porter in a delivery round.

Figure 2-7: Fernhay power-assisted trolley

Image credit: Fernhay

2.37 Although these battery-assisted vehicles allow high yields per porter, they are currently illegal to use on public land in the UK due to strict laws governing the use of power-assisted vehicles.

2.38 Some operators we engaged with are primed to invest further in battery-assisted trolleys, as the technology is developing rapidly. The commercial case for investment is dampened by the highly restrictive laws governing power-assisted trolleys in London, in comparison to other European cities such as Paris and Berlin.

The opportunity for expansion

2.39 With the case studies detailed above, several operators are investigating the viability of consolidation-based walking freight in London and other European cities and are investing time and resources into developing trials and pilot projects accordingly. The commercial opportunity to expand consolidated walking freight as a viable mode of sustainable logistics is evidently attracting interest from the private sector.

2.40 Although some of the largest operators are entering the space for trial purposes in the UK, there are factors impacting the commercial viability of expanding walking freight and therefore constraining its growth potential, including restrictive regulations governing equipment available for use by porters on-street.

Consolidation-based walking freight has attracted private sector interest, but its commercial viability is constrained by high land prices and limited carrying capacity per worker.

2.41 Our engagement with operators and wider research and analysis has identified where expansion of consolidated walking freight operations would be most feasible in London, as well as identifying its operational and economic impacts. These factors, and solutions to overcome barriers to expansion, are detailed in the following chapters.

3 The benefits of walking freight

What are the benefits of walking freight?

3.1 Walking freight is estimated to have substantial benefits, arising from a range of impacts. Our engagement work with operators, reviewing evaluations of existing trials, and appraisal evaluating the economic and carbon emissions improvements from reducing vehicle distance travelled, have allowed us to assess and quantify the potential benefits of walking freight to London.

3.2 The benefits of walking freight are principally found in three core areas:

- Carbon emissions reductions, as a result of lower vehicle distances travelled;
- Economic benefits from reductions in vehicle distances travelled;
- Health benefits from decreased air pollution, reduced road danger, and increased walking; and
- Cost benefits for operators.

3.3 Using the Department for Environment, Food and Rural Affairs (Defra) **Emission Factors Toolkit (EFT)** we estimate that expanding walking freight could reduce London's carbon emissions by 4.7 kilotonnes per year.

3.4 Using the Department for Transport's **Transport Analysis Guidance (TAG)**, we calculate that the benefits of expanding walking freight operations within the Central Activities Zone (**CAZ**) can deliver at least £37 million in benefits to London's economy per year.

Reducing vehicle distance travelled

Identifying the scope of walking freight in reducing vehicle distance travelled

3.5 The benefits of reducing distance travelled by vehicles are substantial and are a key factor determining the overall benefits of walking freight. Consolidated logistics models have been shown to reduce the overall distance driven by operators, when compared with a traditional van-based model. **Gnewt Cargo's 2019 trial** in the City and Bankside areas of central London, for example, reduced vehicle mileage during the trial by 30%. Evri also told us that their walking freight trial operation in Kennington in 2021 had a significant impact in reducing van kilometres travelled compared to their usual operations.

3.6 Using this data from existing trials of walking-based consolidation, we estimate that if consolidation-based walking freight were to be expanded across the **CAZ**, this has the potential to deliver a 10% reduction in kilometres (km) driven for logistics purposes in the **CAZ**. This would equate to an estimated 0.4% reduction in all light goods vehicle (LGV) kilometres

travelled in Greater London, which equates to a reduction of 23.4 million kilometres per year (calculated using the Department for Transport's **road traffic count data 2020**).

3.7 This reduction in kilometres driven varies across different road types within London. Given that walking freight would be concentrated in the **CAZ**, we calculate that the overall estimated reduction in kilometres driven includes:

- 11.8 million kilometres per year reduced on London's A-roads
- 11.6 million kilometres per year reduced on London's minor roads

3.8 Overall, expanding walking freight across the Central Activities Zone could therefore reduce the overall distance travelled by LGVs in London by 23.4 million kilometres per year.

Carbon emissions reductions

3.9 With each vehicle kilometre removed, carbon emissions are reduced. Although the carbon impact of operating consolidation centres and manufacturing equipment to support porters on foot is not zero, it can be assumed that the carbon emissions from this would be negligible compared to operating a traditional van-based logistics model.

3.10 Defra's EFT generates estimates for the average carbon emissions of different vehicle types travelling at different average speeds, and accounts for improvements to average engine efficiency over time as new vehicles are added to fleets and older vehicles are retired.

3.11 EFT estimates that the light goods vehicle (LGV) fleet in the UK in 2022 comprises a mix of diesel, petrol, and electric powertrain vans, in the following proportions:

- 98.4% diesel traction
- 1.2% petrol traction
- 0.4% electric

3.12 The EFT estimates that in 2022 the average carbon emissions generated by travelling at an average speed of 30kph (18mph) is:

- 202.5 grams per kilometre for diesel LGVs, and
- 224.5 grams per kilometre for petrol LGVs.

3.13 Therefore, given that we estimate walking freight could reduce LGV distance travelled in London by 23.4 million kilometres per year, we estimate this will reduce carbon emissions by 4.72 kilotonnes per year.

> Expanding walking freight across the Central Activities Zone could reduce London's carbon emissions from transport by 4.7 kilotonnes per year.

3.14 The potential carbon emissions reductions arising from a modal shift away from a traditional van-based model to a consolidation-based walking freight model are not insubstantial. Expanding walking freight in this way would support London's goal to reaching net zero carbon emissions by 2030.

Quantifiable economic benefits

3.15 With each vehicle kilometre removed, economic benefits are also generated. The government's Transport Analysis Guidance (TAG) provides a framework to quantify estimated benefits per kilometre removed. The TAG identifies that for each kilometre driven by an LGV that is removed in London, several quantifiable economic benefits are generated, in the following areas:

- reduced congestion for other vehicles on the road;
- reduced road wear / maintenance requirements;
- reduced road risk and incidences of collisions;
- reduced local air pollution;
- reduced local noise pollution; and
- reduced carbon emissions.

3.16 Since walking-based consolidated logistics operations would be most heavily concentrated in the CAZ rather than lower density areas of the city, we estimate that the benefits derived from decongestion, improved air quality, and reduced noise would be substantially higher than average, since the CAZ suffers more heavily on average from existing congestion, noise, and air pollution.

3.17 Using figures from the TAG Data Book, and weighting the data to account for the concentration of benefits in the CAZ, we have generated the estimated impact per vehicle kilometre removed in the CAZ on London's A-roads and London's minor roads, based on an expansion of walking freight serving the CAZ. These figures are in 2020 prices.

Table 3-1: Quantified economic benefits from reduced vehicle distance travelled, based on weighted Department for Transport TAG Data Book values (2020 prices)

Impact generated	Estimated marginal benefit per kilometre reduced on London's A-roads by lights goods vehicles	Estimated marginal benefit per kilometre reduced on London's minor roads by lights goods vehicles
Reduced congestion for other vehicles on the road	£1.584	£0.466
Reduced road wear / maintenance requirements	£0.001	£0.001
Reduced road risk and incidences of collisions	£0.029	£0.029
Reduced local air pollution	£0.095	£0.105
Reduced local noise pollution	£0.004	£0.004
Reduced carbon emissions	£0.044	£0.052
Total	**£1.76**	**£0.66**

3.18 We therefore estimate that the quantifiable benefit generated varies from £0.66 per LGV kilometre removed on minor roads within London to £1.76 per LGV kilometre removed on A-roads within London.

3.19 Most benefits derived from reduced vehicle kilometre arise from reduced congestion, especially on the city's A-roads. The impact of improved air pollution and carbon emissions also have a lesser but not insubstantial effect.

3.20 Having estimated the potential reduction in kilometres travelled on different road types in London, as well as marginal benefits generated per kilometre reduced across different road types, the overall quantifiable impact of expanding walking freight within the **CAZ** can be estimated at £28.4 million per year (2010 prices). This equates to £37.2 million in benefits per year in 2020 prices.

Expanding walking freight across the Central Activities Zone could generate £37.2 million in benefits to London every year (2020 prices).

3.21 Although this method of appraisal is not without limitations, our exercise does show that walking freight, enabled by expanding logistics consolidation in the Central Activities Zone to reduce distances travelled by LGVs, has the capacity to generate significant economic benefits to the city.

Health benefits

3.22 Reducing vehicle distance travelled also has a positive impact on air pollution and noise pollution, and reduces road danger. Although the TAG quantifies these benefits relatively modestly compared to decongestion, these health effects are felt in aggregate across the large numbers of people. Improving air quality is also a key aim of the **Mayor of London's environment strategy**.

Reducing road danger

3.23 A reduction in road danger, which would be generated by the estimated reduction in vehicle traffic, is a substantial benefit for London. This is particularly beneficial to the dense areas of the city where walking freight is most feasible as a way of reducing numbers of LGVs on the streets. By reducing LGV kilometres in the densest areas of the city where there are high volumes of pedestrians and cyclists, London will be a safer, more pleasant place to visit and spend time. It would also complement efforts to increase walking and cycling led by the Mayor of London, as people would consider them to be safer and more pleasant.

By reducing light goods vehicle kilometres in the densest areas of the city where there are high volumes of pedestrians and cyclists, London will be a safer, more pleasant place to visit and spend time.

Air pollution

3.24 Light goods vehicles, although subject to the ULEZ standard, are a mode of transport dominated by diesel power, in comparison to other motor vehicles. Although the Euro VI diesel standard is a relatively strict standard compared to other areas of the UK, diesel vehicles are still considered to be more damaging to air quality than petrol vehicles. Reducing the distance travelled by these vehicles in the densest areas of London will bring substantial long term health benefits to residents and visitors through improved air quality.

Population health

3.25 Walking freight, like cargo bike-based logistics, also generates health benefits for workers themselves. In one shift, a porter could walk well over 10,000 steps to complete a delivery round on foot. Aside from direct health improvements for those workers compared to a purely van-based logistics model, there would also be economic benefits due to reduced sick days taken.

3.26 The Transport Analysis Guidance estimates that for workers who benefit from at least 20 minutes of exercise daily, sick days are reduced by an average of 25%. Additionally, this impact would also deliver operational benefits for operators due to less work hours lost to sickness.

3.27 Operators indicated to us that to reduce fatigue and improve staff resilience, they may place an upper limit on the total distance porters are expected to walk within a single shift, and that they would need to adjust their sorting systems to accommodate this.

Operating cost benefits

3.28 Walking freight also generates operating cost benefits for logistics operators. Aside from reduced absenteeism from improved worker health (due to more time spent walking compared to a purely van-based model), the following benefits can also be expected:

- **Reduced fuel and maintenance costs –** Gnewt Cargo's 2019 trial estimated driving time reductions of 71% and driving distance reductions of 30%. Evri and UPS indicated to us they observed similar operational impacts in their 2021 trials. These improvements result in lower fuel consumption, delivering operational cost savings for operators. Additionally, reduction in vehicle distance travelled ensures that fleet vehicles may be deployed more efficiently and the overall maintenance impact of the operation is reduced.
- **Reduced parking and loading fines –** Gnewt Cargo's 2019 trial calculated that parking time was reduced by 65%. Walking freight would require drivers of vans to spend less time searching for parking spaces, due to increased volumes of low weight parcels being delivered on foot.

Operational cost pressures

3.29 Although vehicle distance travelled and its accompanying cost savings would have a positive impact for operators, they would however face some higher cost pressure from other aspects of the model.

3.30 Compared to a purely van-based model, walking freight requires higher headcounts due to lower yields per worker, and due to the need to quickly sort and distribute parcels at consolidation hubs from inbound vehicles to porters. Although this would create jobs, it would also increase operational costs and could reduce the viability of walking freight operations.

3.31 Additionally, some operators reported to us that it would be harder to recruit workers into a predominantly walking-based operation than a predominantly driving-based operation, since workers would be exposed to the elements and would face potential security and safety risks from theft, such as when handling high volumes of parcels. One operator reported that walking-based workers would likely command a lower wage than a van-based worker due to the perceived lower skill level required on foot, which could present a further barrier to recruitment. However, the pool of labour to recruit from would also not be constrained by requiring a driving licence.

3.32 In contrast, another operator suggested it would likely be easier to recruit for walking-based workers than for cargo bike-based workers, due to the perception that walking carries less safety risk from road danger than cycling a cargo bike.

Conclusion

3.33 In the limited trials that have taken place in the last few years, walking-based consolidation operations have been shown to reduce distances travelled by logistics vehicle fleets. This results in substantial positive impacts for London's streets through decongestion, improved air quality, reduced carbon emissions, reduced collisions and road danger, reduced noise, and reduced road maintenance.

3.34 We calculate that walking freight has the potential to reduce light goods vehicle (LGV) kilometres travelled by up to 0.4% across Greater London, and that up to 10% of goods delivered into the Central Activities Zone could be carried on foot for their 'final mile'.

3.35 The impact of this reduction in vehicle distance travelled could save 4.7 kilotonnes of carbon emissions per year. Air quality benefits would also be significant, given that the light goods vehicle fleet which forms the majority of logistics movements in London is overwhelmingly powered by diesel traction.

3.36 Reducing vehicle kilometres travelled is also estimated to generate up to £37.2 million in benefits for London per year in economic benefits, derived mostly from reduced congestion. The reduction in distance travelled would also reduce road danger, which would support road safety in London's densest areas.

3.37 Logistics operators, and their workforce, would also benefit from expanding walking freight. Workers would enjoy improved health outcomes, and operators would benefit from reduced vehicle maintenance, fuel costs, parking fines and worker sickness. However, these operational impacts may be partially offset by increased staffing costs due to higher staff numbers required compared to a van-based model.

4 The potential for more walking freight

4.1 Walking freight has excellent potential to expand in specific markets and geographies within London. Although operators told us in our engagement work that direct business to consumer logistics employing walking freight may be limited in scope, there was potential in expanding consolidation hubs to employ walking-based last mile logistics in delivery of letters, personal goods, and small parcels ordered online.

4.2 Our work examined the sectors within the logistics market that would be best suited to walking freight, either in whole or in part, and assessed the parts of London which would best suit the advantages of walking freight over a traditional van-based logistics model.

4.3 Our operator engagement also revealed that the private sector is employing walking freight in comparable European cities such as Paris, Dublin and Berlin, and is ready to invest in new technology to enable this innovative new model to launch in London, given an enabling regulatory environment.

Goods suitable for distribution by walking freight

4.4 Our engagement process revealed that operators principally identify walking freight as having high potential for delivering certain types of goods. Operators indicated these types of goods can be described as “high volume, low weight” parcels. These would typically include:

- personal letters, newspapers and magazines;
- small items of clothing; and
- small household consumer goods.

4.5 Goods such as office supplies, furniture and food, are heavy and bulky, and therefore are harder to walk with large volumes of. They may also require refrigeration and are more likely to be delivered in a directly business-to-consumer model, rather than through a logistics operator or network.

High volume, low weight goods are well suited to delivery by walking freight. These goods also comprise a high proportion of operators’ overall volumes due to high demand for personal deliveries and small parcels.

4.6 Although a limited number of types of goods have been identified as suitable for walking freight operations, these goods comprise a substantial volume of all freight delivered. Most

parcels delivered through logistics networks are small in volume (up to 320 x 240 x 100mm), and it was estimated in 2013 that 86% of all parcels delivered by Amazon weigh **under 2.3 kilograms**, representing a substantial portion of the 5.4 billion parcels delivered per year in the UK (a figure estimated to rise to **7.5 billion parcels per year by 2026**). There is therefore a substantial potential market for goods delivered on foot.

Geographies suited to walking freight

4.7 Our operator engagement indicated that walking freight is generally most viable in certain dense urban geographies, with specific characteristics. Logistics operators are principally focused on reducing the time spent travelling between delivery addresses as much as possible. Areas where the time difference between walking between addresses and driving between addresses is marginal are therefore most suited to walking freight operations.

4.8 Additionally, the operational safety of porters is an important consideration. Two operators raised concerns about the risk to theft from trolleys manned by porters, which are more vulnerable than vans. This is one reason why high value goods may not be well suited for walking freight. Time of day is also a consideration, with dark evenings presenting a higher safety risk and consideration to pedestrian porters compared with van drivers.

High density areas

4.9 Higher densities of buildings (both residential and commercial) create less physical travel distance between addresses on a delivery round. Additionally, areas with high population density will have higher demand for servicing and deliveries than areas with lower population density, as there are more people living in those areas. This means that delivery addresses on a delivery round can be very close together, enabling quick travel time between them on foot.

4.10 Walking freight can therefore be more competitive than a traditional van-based model of logistics in these areas, since the travel distance between address would be more easily surmountable on foot, and demand for deliveries is high.

4.11 In mid-density urban areas, operators indicated that they would generally see more commercial viability using cargo bikes, rather than walking freight, for logistics operations. Although riders still have to park cargo bikes at the kerbside before making their delivery to a premises, their speed and capacity makes them more competitive than employing pedestrian porters. Therefore, walking freight operations are likely best suited for the densest geographies only.

Road networks and vehicle access

4.12 The nature of the road network in an area is also a key component impacting the viability of walking freight. Operators including UPS and Evri indicated that the City of London was an area most suited to walking freight and cargo bike freight operations, because it is particularly difficult to drive and park a vehicle there. The City of London contains:

- a dense network of pedestrian and cycle only alleys and cut-throughs;
- narrow streets which limit traffic capacity;

- vehicle access restrictions on many streets, both 24/7 and at certain times of day only; and
- high congestion, creating unreliable motor vehicle journey times.

4.13 These factors combine to make a foot-based or bike-based logistics model more viable in comparison to a van-based model in the highest density areas, since each would slow down vans more than bike riders and pedestrians.

High density, high population, traffic congested areas are best suited to host hub-based walking freight logistics operations.

4.14 In lower density areas, the advantages of a walking freight model are however more clearly outweighed by the disadvantages. In these areas, the average distance between delivery addresses makes a van-based model more time-efficient compared to walking, and congestion has less impact than in denser areas. Therefore, a van-based model is more time (and therefore cost) competitive to the operator in these areas.

What areas of London are best suited to walking freight?

4.15 We undertook a GIS-based analysis to understand the areas of London with the highest population density, and therefore those which would be best suited to being serviced by walking freight. Our methodology examined the density of different areas of London by calculating the estimated daytime population of the city. This estimate takes **Census (2011)** data and accounts for commuting flows into and around the city in a typical workday, to produce an estimated population present during the daytime period, when most deliveries are made.

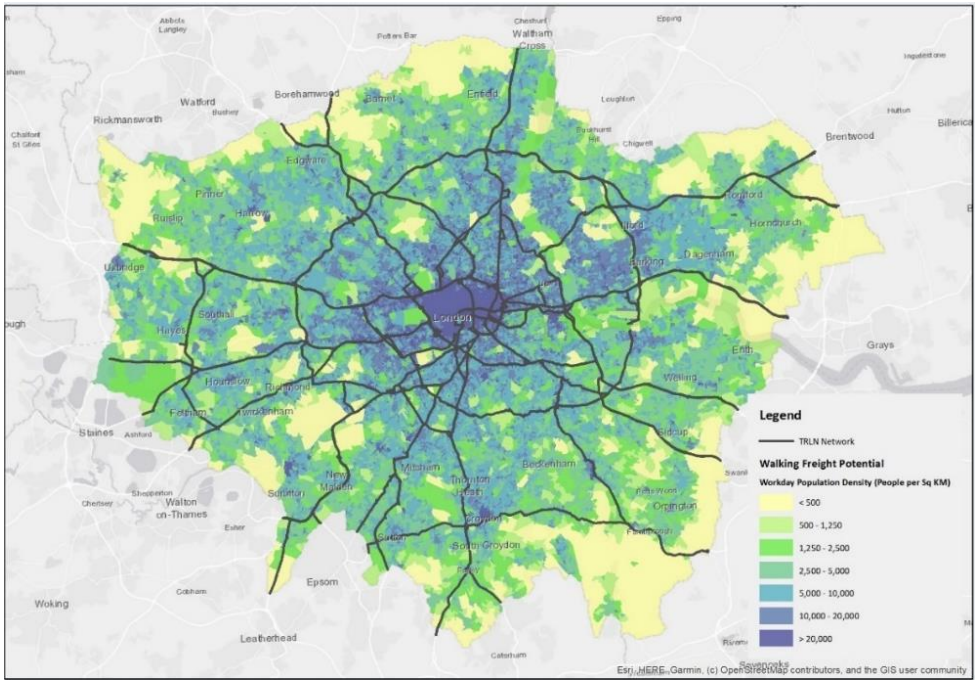

Figure 4-1: Estimated workday population density, Greater London

4.16 This analysis reveals that the Central Activities Zone (CAZ) as well as some outlying areas such as the Isle of Dogs and Croydon, are the most densely populated parts of the city during a typical working day. Both the Isle of Dogs and Croydon contain high densities of office space, commercial space, and residential units in high rise buildings. This means that all of the CAZ, as well as these outlying areas, have a population density of over 20,000 people per square kilometre in a typical workday.

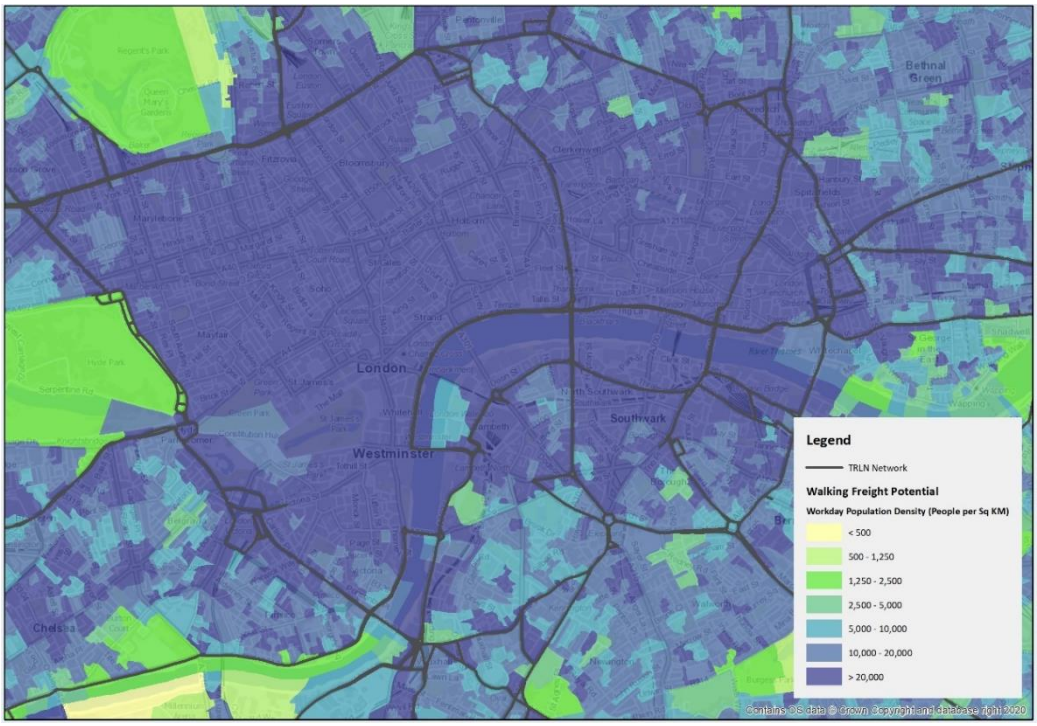

Figure 4-2: Estimated workday population density, central London

Strategic road access

4.17 Although a walking freight operation would therefore be well suited to most of central London, it would need to be supported by consolidation hubs within that area. Consignments of high volume, low weight deliveries would need to be brought in by either van or lorry to a logistics consolidation site in, or on the fringes of, central London. At this site, porters would unload the van and distribute the goods on foot. Strategic road access, such as proximity to the Transport for London Road Network (TLRN) may therefore be a factor in assessing which areas of central London may best be suited to host a consolidation site.

4.18 The TLRN, shown on

4.19 Figure 4-2, gives good access to the wider national highway network and can accommodate large lorries. The TLRN does exclude specific areas of central London (such as Soho, Holborn and St James), which may therefore make it more challenging to accommodate a large vehicle, once per day or more. On the other hand, areas such as Marylebone, Waterloo, Farringdon and Aldgate have excellent access to the TLRN. Farringdon already has at least one consolidation site.

Outside central London

4.20 Some metropolitan centres have similar workday population density to central London, and therefore could also be well suited to walking freight operations. As Figure 4-3 and Figure 4-4 show, the Isle of Dogs and Croydon have high workplace population density, and both areas have good access to the TLRN – Croydon is close to the A23 trunk route connecting south to Sussex, and the Isle of Dogs is close to the A13 trunk route connecting east to Essex.

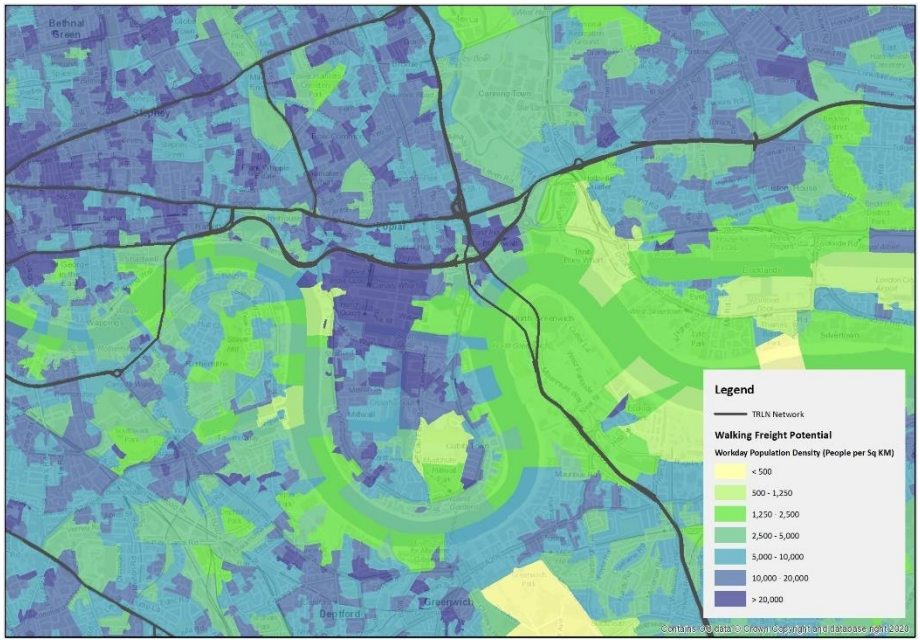

Figure 4-3: Estimated workday population density, Isle of Dogs area

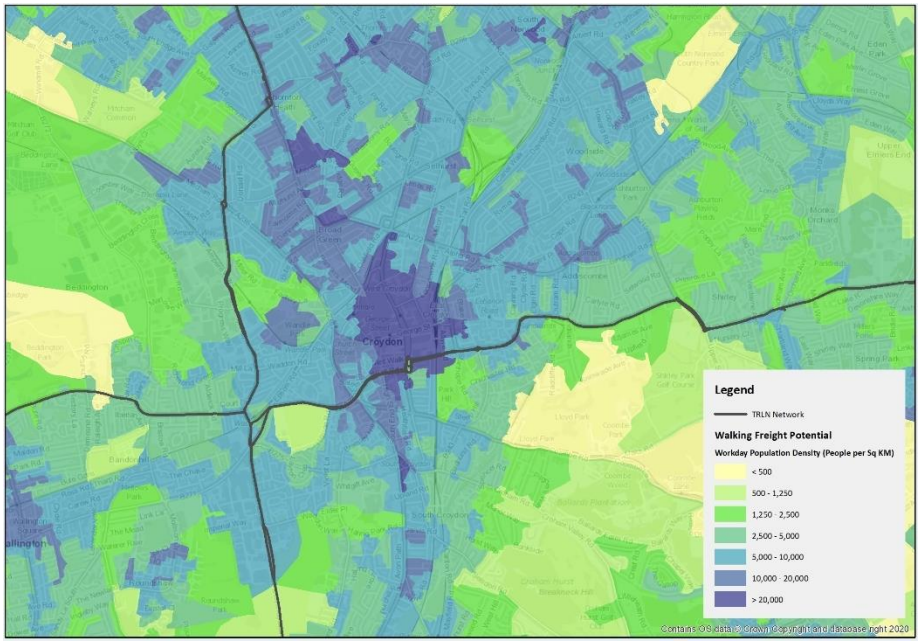

Figure 4-4: Estimated workday population density, Croydon area

4.21 These two metropolitan centres therefore have good potential to host logistics consolidation hubs enabling walking freight, and would be good areas to trial walking freight operations to understand their viability outside central London.

4.22 The Isle of Dogs is a relatively unique site in London and is particularly well suited to a consolidation-based walking freight trial. The centrepiece of the area is the Canary Wharf estate, which contains high density of offices and commercial space, and the estate is surrounding by high rise, high density housing. Canary Wharf is a private estate, where Canary Wharf Group is the sole landowner. There is also plentiful space available in underground car parks around the estate, which are reported to be underutilised. A trial on the estate could be led by Canary Wharf Group and could repurpose underground car parking space to act as a consolidation hub for the whole estate and wider Isle of Dogs.

4.23 It should also be noted that the coronavirus pandemic has increased working from home, which will impact the typical workday population density in London. We do not know the full extent of this impact as of May 2022, but it is safe to say that the densest areas of the city remain where offices are situated in the **CAZ**, Isle of Dogs, Croydon, and other clusters such as Battersea / Nine Elms and Stratford.

Investing in new technology

4.24 Logistics operators are always looking for innovative ways to improve their reliability and reduce their cost base. In central London, congestion and vehicle access restrictions create the incentive for operators to invest in new technology and develop new approaches to improving the efficiency of their operations. Operators have therefore invested in trials, and new technology, to understand the potential for walking freight in supporting their operations in the city.

Parcel sorting and routing software development

4.25 Operators invest heavily in improving their routing software. It is likely that the accuracy on foot-based routing software will continue to improve, given that consumer-facing software has advanced hugely in the past decade.

4.26 Evri, DPD and other operators indicated that their software investment is on a perpetual cycle with the aim of increasing efficiency of routing and sorting for all modes of logistics, including walking freight. Proprietary parcel sorting software, such as that developed by Ford, was used in a walking freight trial by Evri in 2021. This software drove the sorting process of parcels for onward delivery by porters on the ground.

Walking trolleys / platforms

4.27 Operators indicated to us that their walking freight operations in Dublin, Paris, and other European cities were already firmly established. These operations employ unpowered trolleys and traditional carrier bags to a limited extent.

4.28 Central to these operations are the use of electric-assisted trolleys, which allow porters to carry an order of magnitude more goods per delivery round. Investment in advanced power-

assisted trolley / walker technology, such as that developed by Fernhay, allows operators to scale up consolidation-based walking freight and achieve profitability by increasing payload per worker. Some operators also indicated they were considering investing in developing their own proprietary trolleys that would perfectly suit their requirements.

4.29 It is not known what, if any, potential danger electric-assisted trolleys may pose to other pedestrians, but their very low speed (walking pace) and large physical footprint ensures they do not possess the same risks to pedestrians as nimbler, faster power assisted vehicles such as electric scooters.

Power-assisted trolleys allow porters to carry up to 200 kilograms of parcels on foot per delivery round, compared to a maximum of 25 kilograms in a shoulder-slung holdall.

Restrictive laws impacting use of electric-assist trolleys

4.30 With the private sector already investing to ensure yields carried on foot can increase and the mode be made more competitive compared to van-based or cargo bike-based logistics models, there is growing pressure on national government to reform the current regulations governing electric-assist trolleys. Currently this technology is illegal to use on the public highway (both road and pavement) in the UK, governed by restrictive vehicle licensing laws.

4.31 Although the government have indicated their intention to review the relevant laws, it will require primary legislation through Parliament before the use of electric-assist trolleys is made legal for use on public highways in the UK. This process is expected to take time and faces competition from more politically urgent issues.

4.32 Until this high barrier to expansion is resolved, it is likely that the use of walking freight in London will not 'take off' in the same way that it has done in other European capital cities to date.

Supporting accessible streets

4.33 In addition to legal barriers to harnessing new technology, walking freight faces a barrier in the public realm and on street environment. Although London's streets rank well for some accessibility indicators such as the frequency of dropped kerbs, many of London's pavements are narrow and effective footway width can be obstructed by fixed obstacles such as bollards, telegraph poles, and road signs.

4.34 Operators reported to us that an accessible on-street environment is also one that increases the competitiveness of walking freight logistics operations and improves its viability in comparison to a van-based or cargo-bike based model. Restricted access prevents porters from smoothly operating heavy trolleys containing high volumes of parcels, which in turn limits the speed and cost effectiveness of the mode. This is limited not only to the public realm, but also to servicing accesses to off-street premises.

An accessible on-street environment is also an environment that increases the viability of walking freight.

4.35 The issue of accessible streets would be compounded if e-assist trolleys were to become legal for use in the future in the UK. The weight of a fully laden e-assist trolley would add serious challenges to their manoeuvrability around constrained pavements, and up and down kerbs, through narrow gaps between obstacles, and avoiding conflict with other pedestrians and road users.

4.36 To break down this barrier to walking freight's viability as a model, public realm and building accesses should be improved at the design stage. Updated guidance for designing public highways and spaces, as well as guidance for architects designing servicing access to new buildings, would ensure that the full range of accessibility needs are considered and planned for.

Supporting multi-modal logistics

4.37 A consolidation-based walking freight model would complement the range of other logistics modes which operate more widely in London. This would not necessarily be limited to road transport only. When deliveries are 'double headed' (i.e. two different modes of transport are employed in a delivery, with one mode bringing the goods into a consolidation site in London, and a second mode making the onward journey to the customer address) walking freight would support established 'final mile' modes, such as low emission vans and cargo bikes, to service the densest areas of the city.

Walking freight would support established 'final mile' modes, such as low emission vans and cargo bikes, to service the densest areas of the city.

4.38 The range of logistics models where walking freight could complement cargo bikes and low emission vans include:

- Inbound deliveries by lorry, coming into London on the TLRN, unloading at large consolidation hubs in central or inner London, where onward deliveries are made by foot and/or cargo bike or low emission van.
- Inbound rail freight to stations and freight terminals in central London, for onward delivery by foot and/or cargo bike or low emission van.
- Inbound deliveries by van to smaller consolidation hubs in dense areas of the city, for onward delivery by foot and/or cargo bike.
- Inbound deliveries by river, being transferred at a central London wharf for onward delivery by foot and/or cargo bike.

Conclusion

4.39 Walking freight has excellent potential to expand in specific markets and geographies within London, particularly through expansion of consolidation hubs employing walking freight as a 'final mile' solution, either on its own or in support of cargo bikes or low emission vans covering a wider area.

4.40 Walking freight is well suited to high volume, low weight goods, which includes scope for a high proportion of personal deliveries. London's Central Activities Zone (**CAZ**) is well suited to be served by walking freight due to its high workday population and address density, plentiful access restrictions (such as the congestion charge), and high levels of congestion.

4.41 Consolidation hubs would best be sited close to the Transport for London Road Network (TLRN), to enable larger vehicles to enter London and reach sites with relative ease before leaving the area after unloading their goods to be taken on by foot and/or cargo bike. Certain areas of the city such as Bankside, Aldgate, Marylebone and Pimlico are therefore well suited to host consolidation hubs as they are well served by the TLRN. Walking freight could also complement waterborne or rail-based logistics consolidation, enabling 'final mile' delivery of goods into the city from consolidation centres and intermodal sites.

4.42 Some areas outside central London are also well suited to walking freight, with Croydon and the Isle of Dogs being located close to the TLRN and hosting high population and address density.

4.43 Operators have indicated to us they are investing heavily in developing their software technology, as well as innovative new hardware, to increase the competitiveness and viability of walking freight compared to cargo bikes and traditional van-based logistics models. However, they are constrained heavily by existing laws banning the use of power-assisted trolleys to carry parcels on public highways in the UK. This has stymied their progress implementing walking freight in London, compared to comparable European cities.

4.44 Operators also indicated that accessibility is a key constraint preventing walking freight from being as competitive as it could be. Pavements are often constrained in width, and lack dropped kerbs in compliance with the Equality Act (2010), which is a barrier to pedestrian porters moving heavy trolleys quickly and smoothly around the public highway. Improving design guidance for the public realm, as well as for architects and planners designing off-street servicing facilities, would ensure that London is futureproofed to accommodate walking freight.

5 Recommendations

Introduction

5.1 Our operator engagement, benefits assessment, and GIS analysis has informed our approach to developing the following recommendations to enhance and expand walking freight as a logistics mode across London.

5.2 Logistics land is in short supply in central and inner London. This constrains the feasibility of walking freight to service the densest parts of the city, as walking freight operations must be underpinned by logistics consolidation spaces, where goods are transferred from a vehicle (such as a van or lorry) and distributed out to porters on foot for onward delivery. Due to a range of wider trends and policies, spaces where this activity would take place are in extremely short supply, and commands very high rents. Demand for any such space has also increased throughout the pandemic due to increases in home deliveries and new start-ups in the food-for-delivery space, further increasing the price this type of space commands.

5.3 Although large parts of the Central Activities Zone (**CAZ**), as well as some outlying metropolitan centres, are sufficiently dense to enable walking freight as a competitive logistics model, current technological regulations and on-street accessibility constraints hinder walking freight's potential to expand further.

5.4 Our recommendations for next steps are explained in four categories. These are:

- enhancing planning policy and skills with regard to freight planning and increasing logistics land available;
- reforming electric-assist regulations governing trolleys and electric-assisted equipment for use on the public highway;
- developing and showcasing the walking freight market, including establishing a trial walking freight logistics hub, and
- deliver fully accessible highways and pavements.

5.5 A summary table showing each recommended next step is also presented below. This shows which organisations should lead which actions, as well as how CRP can support and facilitate these actions going forward.

5.6 The table below also shows indicative timescales and relative costs associated with each next step. Most are assessed as relatively low cost to implement, and short term (up to 2 years) to medium term (2 to 5 years) in scope.

Table 5-1: Summary of next steps recommended, alongside action leads and CRP's role facilitating each action

Recommendation / action	Who leads in delivering this action?	Who supports delivering this action?	What is CRP's role to facilitate this action?	Timescales	Cost
Enhance freight planning policies and skills					
1) Invest in freight planning skills	Borough councils	GLA / Mayor of London	Raise awareness of freight planning and its important role in enabling growth and sustainability within the public sector	Short term	££
2) Safeguard existing logistics class B8 land	Borough councils	GLA / Mayor of London, operators	Raise awareness of the need for planning policy to safeguard new and existing logistics land	Short to medium term	£
3) Harness opportunities for delivering logistics space in central London within mixed use developments	Borough councils	GLA / Mayor of London, BIDs, operators	Raise awareness and showcase good practice case studies harnessing opportunities brought about by development	Short to medium term	£
Reform electric-assist regulations					
1) Build a broad coalition advocating for reform to electric-assist regulations	GLA / Mayor of London, Borough councils, operators	BIDs	Raise awareness with local councils of the importance and urgency of reform	Short term	£
2) Revise existing statute law to allow electric-assisted equipment to be used on the public highway	National government	Borough councils, GLA / Mayor of London, BIDs, operators	Work with public and private sectors to develop a broad spectrum of stakeholder support, to make the case for reform with a unified voice	Short to medium term	£
Develop and showcase the walking freight market					
1) Trial a temporary logistics hub space focused on walking freight in the Central Activities Zone (CAZ), utilising a temporary change of land use at a suitable site	Borough councils, operators	GLA / Mayor of London, BIDs, landowners	Identify a suitable host borough, work with that borough to identify potential sites, raise awareness of the project among landowners and operators	Short term	££
2) Raise awareness among public and commercial landlords, showcasing the post-pandemic	BIDs, Borough councils	GLA / Mayor of London, operators	Raise profile of walking freight among BIDs and borough councils, develop list of good practice case studies to showcase to landlords	Short term	£

opportunities to deliver logistics class B8 land in underutilised spaces in line with New London Plan policy SD4					
3) Ensure the public sector remains abreast of the walking freight market as it develops further	GLA / Mayor of London, operators	BIDs, landowners	Continue periodic engagement of private sector operators to understand changes in the market	Continuous	£
Deliver fully accessible highways and pavements					
1) Ensure pavements and on-street loading bays are fully accessible	Borough councils, GLA / Mayor of London	BIDs	Develop guidance for highway authorities to support them, at design stage, in considering walking freight requirements – in addition to more general accessibility requirements – as part of new public realm schemes	Short to medium term	£££
2) Ensure servicing entrances in new developments are designed to include access on foot	Borough councils, landowners	GLA / Mayor of London, BIDs	Develop guidance for planning authorities to develop policies ensuring servicing entrances in developments are fully accessible	Short to medium term	£

Enhancing planning policy and skills with regard to freight planning and increasing logistics land available

5.7 Within London, logistics land is in very high demand. Customer expectations of prompt delivery of consumer goods, as well as pressure to develop industrial land into other land uses, has delivered an environment where warehousing and logistics space (class B8) is under intense pressure.

5.8 The Centre for London reported in January 2022 that industrial land is **facing a critical shortage** and calls for immediate action from the public sector to address this. This sentiment was echoed in our operator engagement for understanding the current walking freight market. Too often, existing logistics class B8 land is sacrificed to make way for housing and mixed-use development.

5.9 Our operator engagement found particular frustration at local planning policy such as Local Plans, which operators believed did not place enough emphasis on the importance of class B8 land use for enabling logistics consolidation hubs to be established and operate successfully. When new developments are permitted, opportunities to integrate logistics consolidation hubs are lost, due to this lack of emphasis within local planning policy.

5.10 Planning policy, at both London-wide level and Borough level, must ensure that class B8 logistics and warehousing land is:

- Preserved / safeguarded for continued future use, where it already exists
- Expanded, ensuring it features sufficiently within Local Plans, and is built out when planning consent is granted for new developments

The public sector needs to 'walk the walk' on logistics planning and policy to enable an expansion of walking freight operations in London.

5.11 Further, there is a perceived shortage of freight planning skills and resources within planning departments at Borough level. Investment in these skills, both at officer level and councillor level, would ensure that delivering expansions to, and preventing loss of, class B8 land would have more technical and political support and would ensure the opportunities available when sites come forward are more closely scrutinised.

Next Steps

5.12 The following steps are proposed for the public sector to ensure this recommendation is developed further and set in train:

1. Borough councils must invest in and nurture freight planning skills within planning departments;
2. Borough councils must safeguard existing, and develop an uplift in, logistics land (use class B8) within Local Plans, and
3. Borough councils must harness opportunities for delivering logistics space in central London within mixed use developments.

5.13 CRP will continue to raise awareness around each of the above steps among local authorities and the GLA / Mayor of London, as well as the private sector.

Reforming electric-assist regulations governing trolleys and electric-assisted equipment for use on the public highway

5.14 Operators are expanding consolidation operations in cities across Europe and the world. This has included walking freight models covering the densest city centre areas with constrained vehicle access and slow vehicle journey times due to high congestion. Operators see high value in expanding these operations within London, but their efforts have been frustrated by outdated laws governing micromobility and e-assist technology.

5.15 Within Paris and Dublin, for example, operators are free to employ electric-assist trolleys for use on highways (including both carriageways and pavements). Pedestrian porters can harness these trolleys to carry large quantities of goods on foot (up to 200 kilograms of payload), which represents a vast, 'game-changing' improvement over using a non-power assisted trolley both in terms of payload and travel speed. The increase in parcels delivered per worker, and their increased range per delivery round, ensures there is a competitive advantage to employing a walking freight model over a purely van-based or cargo bike based model.

Power-assisted trolleys allow porters to carry up to 200 kilograms of parcels on foot per delivery round, an eight-fold increase in capacity compared to a shoulder-slung holdall.

5.16 Within the UK however, operators are presently banned from using electric-assist platforms for foot-based porters. The 1835 Highways Act forbids use of battery-assist vehicles on the pavement and forbids their use on the carriageway without meeting strict licence conditions. Such a licence would also not be granted by the Driver & Vehicle Licensing Authority (DVLA) for any vehicle that does not meet certain crashworthiness standards, effectively prohibiting their use in the UK on all public land.

5.17 Operators stand ready to invest in this new technology and are actively lobbying government to reform these regulations. Public sector organisations are well placed to join with the private sector in this effort, demonstrating to government that London and other UK cities are unified on the issue and are at risk of falling behind other European cities for fostering innovation to deliver sustainable growth.

Next Steps

5.18 The following steps are proposed for both the public and private sectors to ensure this recommendation is developed further and set in train:

1. GLA / Mayor of London, borough councils, and private operators must work together to build a broad coalition advocating for reform to electric-assist regulations, and
2. National government must revise existing statute law to allow electric-assisted equipment to be used on the public highway.

5.19 CRP will continue to raise awareness with the public and private sectors around each of the above steps, developing a spectrum of stakeholder support to make the case for reform with a unified voice.

Developing and showcasing the walking freight market, including establishing a trial walking freight logistics hub

5.20 Although operators are trialling walking freight operations at present, the market is relatively underdeveloped. The cargo bike logistics market is several years more mature than the walking freight logistics market.

5.21 Operators' needs are prone to change as the technologies and market for walking freight develop, and these needs must be fully understood for the public sector to best enable the market to expand. The public sector should engage periodically with logistics operators to understand how the market develops going forward, as new technology is trialled on London's streets.

5.22 In conjunction with this, BIDs and borough councils should lead in raising awareness of logistics consolidation and walking freight with commercial landlords, who may see an opportunity to repurpose underused space in central London into class B8 land.

5.23 The Covid-19 pandemic has also delivered a unique opportunity to deliver more consolidation logistics space, through flexibly repurposing underused space on a temporary basis. There are many existing retail and café units across the Central Activities Zone (**CAZ**) which remain vacant, due to the fall in demand for their services during the pandemic-induced lockdowns in 2020 and 2021 and continued working from home in 2022.

> The pandemic has delivered a unique opportunity to deliver an increase in logistics land, through flexibly repurposing underused commercial space in central London.

5.24 A suitable trial should be developed with one or more operators to make use of this opportunity to deliver a sustainable consolidation hub, with walking freight forming a core element of the 'final mile' solution. Comparable trials in temporarily changing land use have already been conducted, such as when the City of Westminster trialled a temporary secure cycle parking facility in Soho in August 2020 utilising an existing retail unit. A suitable host borough and site within the **CAZ**, as well as a suitable logistics operator to operate the facility, should be sought.

5.25 Delivering this trial would help raise awareness of the opportunities to landlords and would deliver increased logistics hub space enabling consolidated walking freight operations. It would also align with the Mayor of London's New London Plan policy SD4, which seeks to secure more logistics land in central London.

Next Steps

5.26 The following steps are proposed for both the public and private sectors to ensure this recommendation is developed further and set in train:

1. Borough council(s) and operator(s) to develop a trial logistics consolidation hub space enabling a walking freight trial operation in the Central Activities Zone (**CAZ**), utilising a temporary change of land use at a suitable site;
2. BIDs and borough councils to raise awareness among public and commercial landlords, showcasing the post-pandemic opportunities to deliver logistics class B8 land in underutilised spaces in line with New London Plan policy SD4 , and
3. GLA / Mayor of London, CRP, and operators to ensure the public sector remains abreast of the walking freight market as it develops further.

5.27 CRP will support these actions by identifying potential host boroughs for a trial consolidation hub harnessing walking freight, facilitating and advising the different stakeholders involved, and compiling good practice examples and case studies to showcase the successes and positive impact of expanding logistics consolidation space on a trial basis. CRP will also periodically engage with the private sector to understand developments in the walking freight and logistics consolidation spaces.

Deliver fully accessible highways and pavements

5.28 An accessible on-street environment is also one that increases the competitiveness of walking freight logistics. The key accessibility issues present on London's streets, such as missing dropped kerbs crossing road junctions, narrow and restricted-width pavements, and obstacles in the pavement restricting the width available to wheelchairs and prams, all impact the viability of walking freight.

An accessible on-street environment is also an environment that increases the viability of walking freight.

5.29 Restricted access prevents porters from smoothly operating heavy trolleys containing high volumes of parcels, and this in turn limits the speed at which porters can make deliveries, hindering the competitiveness of walking freight compared to a van-based or cargo-bike supported logistics model.

5.30 The issue of accessibility would be compounded if electric-assist trolleys were to become legal for use in the future in the UK. The weight of a fully laden e-assist trolley would add serious challenges to their manoeuvrability around restricted width pavements, and up and down kerbs. Removing barriers to accessibility is therefore a key driver of enabling expansion of walking freight.

5.31 Public realm design guidance must therefore be updated to include consideration for walking freight as a key component of urban logistics at the design stage, with equal focus as traditional vehicle-based servicing. This should include provision of accessible loading bays, wide dropped kerbs and a suitable effective minimum width of pavements at all times.

5.32 Additionally, highway access and servicing access design bridging the transition from the public highway to private buildings too often creates barriers to walking freight at the customer's premises and at on-street loading facilities. Many new-build premises have dedicated off-street service entrances and internal loading space, but these spaces are usually designed exclusively around vehicles, to the detriment of porters with trolleys on foot. These spaces can be unsafe for people on foot, and in some cases entry by foot is explicitly banned.

5.33 Updated guidance for architects designing off-street facilities would ensure that London's buildings are futureproofed to enable walking freight to grow as a logistics mode. Although some borough councils (such as the City of London) already have strict planning policies in place governing these requirements, this is not consistent across London as a whole and

therefore existing buildings have highly inconsistent accessibility standards within their servicing arrangements.

Next Steps

5.34 The following steps are proposed for the public sector to ensure this recommendation is developed further and set in train:

1. Borough councils and the GLA / Mayor of London to ensure pavements and on-street loading bays are designed to be fully accessible, and
2. Borough councils and landowners to ensures servicing entrances within new developments are fully accessible to porters on foot.

5.35 CRP will support these actions by developing design guidance for highways authorities, and for architects designing off-street facilities, to incorporate the accessibility requirements of porters on foot (and cargo bicycles, where relevant).

6 Conclusion

6.1 Walking freight is a logistics model with significant potential for expansion within London. It has several advantages over other transport modes, which make it an efficient choice in certain circumstances. Walking freight has high potential to serve the densest areas of the city in particular, such as the Central Activities Zone (**CAZ**), Croydon, and the Isle of Dogs.

6.2 Our market engagement has revealed that there is appetite among operators to expand walking freight operations and has indicated that a viable and scalable model employing walking freight could be enabled with provision of consolidation hub spaces within the densest areas of the city. Within these hub spaces, operators delivering inbound parcels would transfer consignments of goods from vans and lorries to trolleys and bags to be carried onward to final delivery addresses on foot, by teams of porters based at the site.

6.3 Walking freight is best suited to deliver certain types of goods, such as small consumer goods and personal deliveries. These goods comprise a substantial proportion of the overall volume of packages delivered by major operators, particularly post-pandemic when online deliveries of small consumer items have surged.

6.4 Walking freight has high potential to generate benefits for London. We estimate that walking freight could reduce London's carbon emissions from light goods vehicles by up to 4.7 kilotonnes, derived from the elimination of up to 0.4% of vehicle kilometres driven by light goods vehicles across Greater London (i.e. one in every 250 kilometres). This traffic reduction is also estimated to be worth at least £37 million per year to London's economy.

6.5 Walking freight also reduces air pollution from light goods vehicles, which are among the most polluting vehicle type operating on London's streets at present. Noise is also reduced, and road danger reduced, through fewer vehicle kilometres travelled. Aside from improving the streetscape and safety for pedestrians and cyclists, this would also generate health benefits for workers in the logistics industry, and would reduce operational costs for operators through reduced fuel use and maintenance.

6.6 The current high demand for logistics land is a constraint on the feasibility of establishing consolidation hubs which could enable walking freight operations to expand in the **CAZ** and other suitable areas of London. Operators such as Amazon and DPD already operate small consolidation sites in central London, but these are not sufficient to move high volumes of goods and are extremely expensive to rent or own. Logistics land must be safeguarded and expanded across central London through planning policy and actively seeking opportunities to deliver an uplift in logistics land, such as through repurposing underused commercial space in the post-pandemic world.

6.7 Current technological regulations also constrain the growth potential of walking freight. Strict limitations on power-assisted trolleys restrict the volume and weight of goods that porters can carry on foot in a single delivery round. Until this high barrier to expansion is resolved, it is likely that the use of walking freight in London will remain less viable than in other European capital cities. Reforming these laws will be key to enabling walking freight expansion in the city, and the public and private sectors have a key role to play making a strong case to national government to reform these laws.

6.8 On-street accessibility constraints also hinder walking freight's potential to expand further. Narrow pavements, missing dropped kerbs, and servicing accesses designed exclusively around vehicles hamper the viability of using trolleys to walk goods around urban areas and deliver high volumes of goods to customer addresses.

6.9 Our recommendations for next steps to unlock these barriers, for the public and private sectors, are:

- enhancing planning policy and skills with regard to freight planning and increasing logistics land available;
- reforming electric-assist regulations governing trolleys and electric-assisted equipment for use on the public highway;
- developing and showcasing the walking freight market, including establishing a trial walking freight logistics hub, and
- deliver fully accessible highways and pavements.

6.10 By taking these steps, walking freight would become more feasible for operators to expand into as an important mode for servicing the densest areas of London's needs is expanded. With the right policies in place, London can harness innovation to improve sustainability, reduce road danger, noise pollution and air pollution, as well as carbon emissions, associated with expanding this innovative logistics mode within the city.

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