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Cross River Partnership Brixton Clean Air Freight Evaluation

Final Report

12/05/2023



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Appendices

Appendix A – CRP Stakeholder Engagement



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1. Summary

- 1.1.1 Momentum Transport Consultancy has been commissioned by Cross River Partnership (CRP) to evaluate the Brixton last mile logistics trial project currently delivered with Pedal Me, a cargo bike operator. The Clean Air Freight project has been funded by Impact on Urban Health.
- 1.1.2 This report summarises:
- The findings of the evaluation of the Cross River Partnership Brixton last mile logistics trial project;
- The outcomes of the project; and
- Outlines future steps that could be taken to enhance uptake in last mile consolidation hubs with cargo bikes for business deliveries.

About the trial

- 1.1.3 The trial aims to identify the possibilities for further development of last mile logistics hubs in urban centres. The trial has been in operation from April 2022 until its scheduled completion in June 2023. The project offered free cargo bike deliveries and a last mile consolidation hub for use by Brixton businesses. Hubs were located in Ewer Street (London Borough of Southwark) and Battersea (London Borough of Wandsworth). Consolidation hubs and the participating businesses are shown on Figure 1 below.
- 1.1.4 The main aim of the trial is to reduce the air quality impacts of business deliveries by reducing the number of deliveries coming into central London for Brixton's businesses, and moving more trips onto zero emission modes such as cargo bikes.
- 1.1.5 This evaluation report uses quantitative data on last mile deliveries made by Pedal Me, and qualitative data from all the businesses who took part in the trial, which were: Stems Wilder, Friendship Adventure, London Beer Lab,







Brixton Brewery, Federation Coffee, Brixton Bid, 3 Space, The Courtesan – all of whom are located in Brixton, south London. Of these, three have given indepth interviews on their experiences of the trial and all eight of the businesses have been surveyed to share their thoughts on the project. We also conducted an interview with Pedal Me. An engagement session with local residents was also held and, together with the business engagement above, this formed the qualitative research for the project.







Figure 1.1: Trial Business Locations







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- 1.2.1 The review undertaken by Momentum has shown that the use of the consolidation hub and last mile cargo bike deliveries enabled participating businesses to reduce their dependency on diesel van deliveries, and the air pollution and CO2 emissions that come with these. Many of the businesses have developed innovative ways of using the consolidation hub and the cargo bikes that have allowed greater re-timing, consolidation and efficiency of deliveries. The benefits from the scheme are highly scalable: the benefits of consolidation and cargo bike deliveries will increase if more businesses take part in the scheme.
- 1.2.2 Overall, there were 194 trips made by cargo bike within the trial, between April 2022 and February 2023. A breakdown of trips by month and for each hub is shown on the chart below.









Figure 1.2: Timeline and Number of Trips Completed During the Cargo Bike Trial Period

Impact of the trial

- 1.2.3 The success of the trial is illustrated by an estimated 277 motor vehiclekilometres being saved as part of the trial – this was calculated from trips for which supplier origin and the type of vehicle used was known. This analysis does assume that the trips replaced were direct vehicle trips from supplier to destination – in reality, delivery trips are often chained with multiple deliveries on a single vehicle. Vehicle kilometres and emission savings should therefore be understood in this context.
- 1.2.4 Based on the vehicle-kilometres savings, estimated emissions savings during the trial are shown in Table 1.1 below.

Emissions Savings compared to diesel van			
CO ₂	109 kg CO ₂		
NO _x	75 g NO _x		
PM ₁₀	27 g PM10		

Table 1.1: Emissions Savings

- 1.2.5 All eight participating businesses surveyed highlighted positive benefits from the scheme and – significantly - seven of the eight would like to continue using it in the future. Regular scheme users were all satisfied or very satisfied with the scheme.
- 1.2.6 Participating businesses were able to use the scheme in highly innovative ways to reduce freight-related emissions and make their logistics operations more cost effective and time efficient. The scheme enabled businesses to:
 - Re-time deliveries to avoid overnight drop offs at business location, saving some operational costs.
 - Consolidate cargo to the hub for onward deliveries.







- Consolidate deliveries at the hub to "drip feed" smaller batches of goods to the businesses when these goods were needed, reducing the need for storage space at the premises.
- Deliver "just in time".
- Make more deliveries to their customers by cargo bike.
- Use the hub for additional storage space.
- Use the hub for reverse consolidation.
- 1.2.7 The intricacies and individual business operational requirements were highlighted with a wide range of ways in which participating businesses consolidated their deliveries and made use of the hub and the cargo bikes. For example:
 - Friendship Adventure, a brewery, used the Southwark hub as a consolidation centre and a secondary base for operations. By sending cans of beer to the hub in bulk by cargo bike, and then allowing onward deliveries by cargo bikes, Friendship Adventure have cut delivery costs and have also significantly reduced the number of vehicle trips that would have been previously required to deliver their goods. Having stock nearer east and central London has also allowed them to reach customers more quickly.
 - Florist Stems Wilder asked suppliers to drop off the flowers overnight at the Southwark hub. The following morning, flowers were delivered by cargo bike to Stems Wilder in Brixton Village Market. This has been a huge advantage for the owner of Stems Wilder as they no longer need to organise delivery arrivals at Brixton Village Market overnight. The cargo bike hub makes it easier for businesses to schedule deliveries outside of peak hours.







- Federation Coffee, a coffee shop, benefited from the consolidation hub opening hours 24/7 are they are not open outside standard business hours and close at 3pm. This means deliveries could reach central London outside peak times and avoided missed deliveries for Federation Coffee.
- The Courtesan, a restaurant and cocktail bar, noted that the deliveries made by the cargo bikes were more reliable than those previously made by van. They told us that vans suffered delays due to lack of drivers and traffic, and this resulted in failure rates between 5-10%, while there have been absolutely no issues with the scheme. This has meant that the number of missing or damaged items has decreased and that the time taken for deliveries to arrive has also decreased. The storage space at the hub has allowed staff to free up space at the business and has meant that just one large order of stock was required from the original supplier delivered to the cargo bike hub, rather than multiple van trips made to the business.
- 1.2.8 The service was free for businesses and widely promoted in Brixton, despite this many businesses opted for business as usual. Some businesses quoted operational constraints or challenges as reasons why they couldn't make more use of the trial service. From the 180+ businesses who Cross River Partnership engaged with between April 2022 and February 2023, eight businesses were recruited to participate in the trial.

Residents' views

1.2.9 Lambeth and Southwark residents took part in a focus group discussing their views on initiatives to promote clean air deliveries. They had a very positive view on the trial scheme and were very supportive of initiatives to consolidate deliveries and encourage cargo bike use – especially if this reduced large concentrations of lorry movements.







Lessons Learnt

- 1.2.10 The trial demonstrated that there is huge potential for cargo bike consolidation schemes to be widely successful. Barriers to large scale expansion do exist, but addressing these should fully realise the potential of significant upscaling of the scheme in the future.
- 1.2.11 An organisation needs to encourage scheme take up (as CRP did). Logistics forms the backbone of many small and medium businesses' operations, and fully transitioning to a consolidated cargo bike scheme can be seen as too big a risk. This is further exacerbated by other external uncertainties facing businesses in the UK.
- 1.2.12 Support needs to be made available to encourage businesses to transition away from traditional fossil fuel freight vehicles and key to achieving this is ensuring that an organisation takes ownership of business outreach and support help small to medium sized businesses transition to consolidated deliveries and cargo bike use. Policies restricting the use of fossil fuel freight vehicles would help with this shift.
- 1.2.13 Major parcel carriers have invested in the electrification of their fleet, and are making more use of cargo bikes for the last mile of journeys. But electric vans still generate pollution, congestion and road safety issues, and the shift to greener modes remains slow. Most logistics operators are unlikely to shift to micromobility for the bulk of their deliveries, unless they are incentivised to do so. Current logistics infrastructure has been mostly based around fossil fuel vehicles and changes to the policy framework will be required to further encourage this shift.







Recommendations for further development

- 1.2.14 The policy framework should strongly encourage businesses and logistics providers to invest in cleaner deliveries. Policies that should be considered include the following:
 - A new charging schedule for polluting vehicles in town centres and cities This could be achieved through already existing mechanisms (e.g. ULEZ), or preferably through smarter charging mechanisms, such as a comprehensive distance-based road user charging system to replace the current congestion charge. The Government and the Mayor of London should work to deliver this change.
 - An increased focus on the retention (and where needed, expansion) of industrial land in strategic locations, especially near town centres, which are key locations for cargo bike hubs. To achieve this, the Mayor of London and local authorities should designate additional industrial land as Strategic Industrial Land (SIL) or Locally Significant Industrial Sites (LSIS).
 - Planning authorities should encourage clean air freight as a planning condition for new developments. As part of this they should ask applicants to put forward cargo bikes delivery strategies.
 - Funding should be made available to local authorities or BIDs to promote clean air freight transitions. Long term (5-10 years) sustained funding should be provided for cargo bike schemes that can reach a significant proportion of local businesses. Economies of scale are vital in logistics, and these can only be achieved through co-operation of local businesses and groups.







- Subsidies and scrappage schemes for small businesses to trial cargo bikes can be highly effective. This would further promote the use of the bikes and, once new patterns are established, can become cost efficient for businesses who would no longer require subsidies. The Mayor of London should boost use of these schemes, which would also require Government funding (or the devolution of taxes, so the Mayor can raise this revenue themselves).
- Greater investment in clean air freight infrastructure is ultimately needed. This could include but is not limited to Government investment in rail freight infrastructure upgrades and investment in river freight – especially upgraded dock space and encouraging the electrification of riverboats.
- 1.2.15 Overall, the trial scheme showed there is significant potential to consolidate business deliveries across an area and switch to a zero-emissions mode for the last mile. This was seen in innovative logistics techniques used by businesses across a variety of sectors. There are also barriers to the expansion of consolidation schemes, which include the price of industrial land in central locations, current logistics systems and infrastructure, and a lack of support, information and incentives to encourage businesses to switch to cleaner last mile deliveries.
- 1.2.16 These issues will need to be addressed to unlock the potential that consolidation and cargo bikes can provide, but this will require organisation, long-term funding, and changes to the policy framework outlined in this report.









Figure 1.2: A Pedal Me rider on a joint engagement visit with CRP to Brixton. Photo credit: Cross River Partnership







2. Introduction

2.1 Background

- 2.1.1 A last mile logistics hub trial for Brixton was launched as part of the <u>Clean Air</u> <u>Villages 4 (CAV4) project</u>. The hub trial took place as part of CAV4 between April and June 2022. CRP then secured funding from Impact on Urban Health (UH) to extend this trial for an additional 9 months (July 2022 to March 2023) and for a detailed evaluation of the trial to take place. The evaluation aims to assess the impact that the trial is having on local air quality, local communities and CO2 emissions.
- 2.1.2 Clean Air Villages 4 (CAV4) was a Defra-funded project led by Westminster City Council in collaboration with 26 project partners to improve the air quality across different London 'villages' where both air pollution and population density levels are high. CRP was delivering the work and CAV4 built on the successes of the award winning CAV1 programme, as well as CAV2 and CAV3, which all focused on interventions to support businesses, communities, and hospitals. The Clean Air Villages 4 programme ran for 15 months, from 1st April 2021 to 30th June 2022.
- 2.1.3 CAV4 aimed to deliver ambitious freight solutions for a clean air business recovery from COVID-19, and the freight solutions implemented incorporated consolidation, distribution, transport mode shift, technology and policy elements, trialled across different 'villages'. The Brixton last mile logistics hub trial was launched in April 2022 as part of the distribution strand of CAV4.
- 2.1.4 The UH funding supports air quality improvements in London and is called <u>Clean Air Freight (CAF)</u>. The project is assessing the feasibility of Rail Freight deliveries into South London terminals and trialling zero emissions Last Mile Logistics from a centre in south London that services Brixton. Figure 1 below







provides a high-level summary schematic of the intended operations of the Clean Air Freight (CAF) projects.



Figure 2.1: Clean Air Freight project

- 2.1.5 The first last mile logistics hub is located in Southwark (52 Ewer Street, SE1 0NR), with a second hub located in Battersea (7 Ingate PI, Nine Elms, London SW8 3NS) that opened in October 2022.
- 2.1.6 The final report explores the impact of the cargo bike consolidation hubs for business deliveries. This explores the air quality emissions, resident engagement, associated costs of the micro-logistics hubs, behaviour change and modal shift, and key considerations in setting up and delivering the project.







2.2 Project objectives

- 2.2.1 The project objectives are to evaluate and summarise the pollution and congestion saving potential of the proposed last mile delivery hub, and understand the associated costs involved for local authorities, businesses, landowners, couriers, or operators that may be considering micro-logistics hubs as part of their operations. The hub enables the consolidation of business deliveries into fewer consignments and supports businesses to bulk-order, while the use of cargo bikes can reduce emissions and traffic congestion, by reducing the number of polluting vehicles on city streets. This is most effective in city centres, where traffic congestion and density are often highest.
- 2.2.2 The optimal location for a hub will depend on varying factors such as the distance from supplier origin, the price of land available, the commercial rent for industrial/logistics spaces, the distance to frequent end-trip destinations and the impact on local air quality. Existing evidence shows that a good hub location includes easy and reliable access to the road network, space to securely store cargo bikes, proximity to the cycle network and the density of the network, and land uses with a higher potential for consolidation. Proximity to orbital roads is often a plus, as this means suppliers can avoid using vans in the city centre, where cargo bikes deliveries have the greatest competitive advantage in terms of speed and reliability.1
- 2.2.3 The project also aims to understand some of the barriers to clean last mile delivery logistics. Whereas traditional logistics vehicles such as petrol or diesel-powered vans might make a circular trip to multiple destinations, because of a more limited payload, cargo bikes would make fewer stops before returning to the delivery consolidation hub. This has meant that implementing cargo bike consolidation schemes can require a change in the entire system of logistics management consolidating deliveries not by supplier but rather by origin.







- 2.2.4 The impact of consolidation could have a pivotal role to play in the London Boroughs of Lambeth and Southwark, where historically, a large number of delivery centres have been located.
- 2.2.5 ² Increasing the number of zero emission vehicles, methods of consolidating deliveries and reducing the number of deliveries to businesses and residents in the borough have actively been encouraged in both the London Borough of Lambeth and the London Borough of Southwark's Air Quality Action Plans, transport strategies and freight plans.
- 2.2.6 It is hoped that following this research more information will be available for logistics operators to assess the potential impacts of implementing cargo-bike orientated last mile delivery systems. Currently, there are many unknowns for organisations seeking to promote more efficient and clean deliveries, and more information on opportunities, limitations and financial impacts would help reduce perceived risk.
- 2.2.7 As well as aiming to reduce these unknown and associated business/commercial risks, this research highlights and quantifies the air quality benefits of using a last mile consolidation hub and cargo bikes, which arise from:
 - the consolidation of business deliveries across an area
 - more efficient procurement by each business
 - mode shift to e-bikes and cargo bikes which have, of course, very low emissions (and zero emissions locally)
- 2.2.8 Understanding air quality benefits of using consolidation hubs and cargo bikes should encourage policymakers to incentivise or require their use.







2.3 Objectives of the evaluation

Trial evaluation

- 2.3.1 The purpose of this project is to evaluate the impact of the use of a last-mile delivery hub that services Brixton by understanding the air quality, behaviour change and financial impacts of using a hub (April 2022 present) versus not using a hub (pre-April 2022).
- 2.3.2 In the mid-point report (prior to the relocation of the hub), data has been analysed comparing the air quality effects of local businesses in Brixton using the last mile logistics hub in Southwark compared with prior logistics operations which did not use the hub.
- 2.3.3 Even following the relocation of the Southwark hub to Battersea, analysis has still been undertaken to compare the use of the hub in its current Battersea location with behaviour of not using a hub before the trial.
- 2.3.4 To help understand the link between last mile delivery hub use and air quality, an emissions calculator has been produced highlighting the difference in emissions between the use of the hub and traditional direct logistics routes between supplier and final business/client.
- 2.3.5 To quantify the impacts to residents around the hub, public engagement sessions have taken place as part of the project. Local delivery routes have also been investigated to highlight potential effects that the use of last mile delivery hubs would have on local residents.

Consolidation Considerations

2.3.6 Currently, there are factors that limit the growth of the last mile delivery hubs. According to the UK Local Government Association, most current issues relate to the operational systems of logistics infrastructure (LGA, 2022). By way of being heavily reliant on vans for deliveries, most systems operate by using one vehicle to deliver to multiple businesses. To allow more







consolidation, logistics hubs would likely need to consolidate to destination area rather than by vehicle. Therefore, land must be prioritised by local authorities, landowners and other city-regional authorities in local areas for logistics and micro-logistics hubs³. Whilst searching for available space in South London, CRP ran into many challenges such as around the availability of land, cost of land, engagement with commercial estate agents and the flexibility of leases. This is outlined further in Section 2.4.

2.3.7 Last mile delivery hubs have the potential to fulfil policy goals, including local authority policy such as the London Borough of Lambeth's emissions targets, regional policy derived from the London Plan (2021) and the Greater London Authority (GLA) Mayor's Clean Freight Strategy which forms part of the Freight and Servicing Action Plan for Transport for London (TfL).

Policy & future

- 2.3.8 The use of delivery hubs cannot be implemented by policy makers alone, logistics companies will need to assess the commercial viability (new revenue streams, financial savings or potential additional costs from not doing so) that last mile delivery hubs can achieve. Larger logistics or e-commerce companies are in the process of trialling or investigating last mile delivery hubs; Amazon have recently introduced a new micromobility hub in east London that services more than 10% of London's Ultra-Low Emission Zone.⁴ The information from this report aims to give guidance and information to support the implementation of last mile delivery hubs and inform future stakeholders, such as investors, businesses and local authorities of the costs and benefits of last mile logistics hubs.
- 2.3.9 As has been noted by CRP, the use of last mile delivery hubs has a clear benefit to health, both in terms of air quality and the better health of logistics workers through exercise using cargo bikes rather than driving delivery vans (CRP, 2021).







- 2.3.10 Planning policy can be an important factor in supporting the use of last mile delivery hubs. With land at a premium in London, logistics companies have often found it financially advantageous to be based away from central areas as warehouse space is cheaper in outer London locations. The decline of industrial land in central areas of London has been well documented.⁵
- 2.3.11 Planning policy makers will likely need to protect remaining central industrial sites to help the viability of last mile delivery hubs this can be achieved through SIL (Strategic Industrial Land) designation, or by including space for logistics hubs in development briefs or planning conditions for larger developments. As the ('last-mile') name suggests, these cargo bike hubs will need to be located closer to the final delivery addresses and thus some prospective last mile delivery operators may find that they simply cannot afford enough dispersed warehouse space in central areas to make their businesses viable.⁶ One way to address this affordability gap would be for local authorities to encourage the provision of new last mile logistics hubs in new developments. A non-exhaustive list of potential interventions and their likely impact is provided in the Table 1 below.







Policy Action	Stakeholders responsible
Protect remaining industrial land through designation, ensure that any loss is reprovided in new developments	Local authorities, GLA
Encourage the provision of logistics hubs in new developments in local plans and the London Plan	Local authorities, GLA, BIDs
Research and share case studies on how logistics hubs can work with other uses in the same or adjacent buildings, and their impacts on local road traffic and safety	GLA, Transport for London, Urban Design London, Cross River Partnership
Increase the amount of space dedicated to on-street loading bays, which could be used as mini consolidation centres	Local authorities, Transport for London
Require that all business in an area consolidate their deliveries in a last mile logistics hub through the creation of zero emissions freight zones	Landowners, National Government, local authorities. BIDs can encourage this
Introduce pay-per-mile road user charging to disincentivise the use of vans, especially non- electric	National Government in partnership with GLA and TfL
Ensure deliveries to public sector organisations, or organisations that enter contracts with public sector organisations, are consolidated	Public sector bodies and agencies (e.g., local authorities, NHS trusts, schools)

Sources: <u>Possible: The Promise of Low-Carbon Freight</u>, <u>Centre for London: Making</u> <u>Space: Accommodating London's Industrial Future</u>, <u>Centre for London: Greenlight –</u> <u>Next Generation Road User Charging</u>, <u>CRP Clean Air Villages Initiatives</u>.







Table 2.1: Key Stakeholders to Influence to Increase Take Up of Last Mile Logistics Hubs

Stakeholder	Evidence Needed to Influence
Organisations that receive deliveries (e.g., businesses, hospitals, schools)	Evidence that using a logistics hub reduces their AQ and CO ₂ emissions,
Organisations that receive deliveries (e.g., businesses, hospitals, schools)	Evidence of cost savings from using a logistics hub as off-site storage space, reducing the number of orders needed, and other benefits such as the ability to schedule deliveries within business hours and improved delivery reliability
Logistics providers	Evidence that operating a last mile logistics hub is cost effective – for this to happen they will need the additional rent costs for the hub to be offset by efficiency gains from shifting to consolidated cargo bike deliveries
Local authorities	Evidence that using a logistics hub reduces AQ and CO2 emissions
Greater London Authority and Transport for London	Evidence that using a logistics hub reduces their AQ and CO2 emissions
Business Improvement Districts (BID)	Evidence that using a logistics hub reduces their AQ and CO2 emissions

2.3.12 Through this project, Impact on Urban Health is producing new evidence on the impacts of delivery consolidation in London. The final report will consider ways that Impact on Urban Health can deliver positive impacts on air quality through encouraging freight consolidation, local behaviour change, bulkbuying and shared storage facilities by multiple suppliers.

2.4 New hub location

2.4.1 As part of the project, CRP and Impact on Urban Health had agreed to move the micro-logistics hub from Southwark to a location near Brixton, or towards the South Circular. The agreed proposed area for which CRP was searching is shown in Figure 2.







- 2.4.2 By October 2022, CRP had contacted 63 people from 60 businesses and commercial real estate agents about sites that could be suitable for the new Brixton last mile logistics hub. The search focussed predominantly on the area shown below in Figure 2, with a particular focus on local areas around Brixton and the South Circular. These could provide significantly more environmental benefits than its current location in SE1, as SE1 in a congested area of central London and avoiding deliveries to this area would be beneficial. The space would ideally need to be on industrial land.
- 2.4.3 CRP were once again met with challenges from industrial and logistics landowners and estate agents around the length of leases, with commercial real estate agents preferring longer leases of at least 12 months, the availability of space and cost in more central locations. Additionally, many flexible storage options had specific requirements on what could not be stored at these locations (e.g., dry food, drinks), that would make it not viable for many of the users of the scheme.
- 2.4.4 The new hub was a 20-foot shipping container located on an industrial estate near Battersea at Wow Storage Battersea. Its use began in October 2022. The Battersea hub address was: Container 3, Wow Storage Battersea, 7 Ingate PI, Nine Elms, SW8 3NS London.
- 2.4.5 The container is 160 sq. ft and 20ft in length. This has been retrofitted to make it suitable for suppliers and Pedal Me to easily deliver and collect from this location (as shown in the Figure 2.2 below). The location is also close to major arterial routes in London, including the A3216, A3205, the A3 and the South Circular. This is predominantly industrial land, with two railway stations nearby. CRP expect footfall in the vicinity of the site to be lower than at the Southwark hub, since it is located in a predominantly industrial area.
- 2.4.6 Figure 2.2 below shows the location of the new micro-logistics hub, based in the storage container in Wow Storage Battersea









Figure 2.2: The Retrofitted Shipping Container Hub in Battersea. Credit: Cross River Partnership









Figure 2.3: Agreed Search Area of Potential New Micro-Logistics Hub







Figure 2.4: New micro-hub site found for October 2022 onwards, located in Wow Storage Battersea





2.5 Methodology

Air quality and CO2 emissions

- 2.5.1 Data from cargo bike operator Pedal Me was made available for all the trips associated with the trial from April 2022 to February 2023. The information on each trip includes pick-up and delivery addresses for trial businesses, time stamp, trip length, supplier address and notes on whether deliveries for multiple trial businesses were consolidated on a single trip.
- 2.5.2 For the purposes of this study, the delivery route that cargo bikes are replacing was assumed as the most direct route from supplier address to the consolidation hub. In reality, deliveries would be optimised so that suppliers can deliver to other businesses in the same round, but it has not been possible to collect this information. It is likely that by delivering to the consolidation hub, suppliers optimise their deliveries along a different route which might change the results of the CO2 emission reduction calculation with respect to the route assumptions utilised.
- 2.5.3 We do not have data on whether deliveries were consolidated with deliveries made to businesses which are not part of the trial, but we were told by Pedal Me that this happens as frequently as possible for efficiency reasons. This consolidation of cargo bike deliveries generates minor air pollution and CO2 reductions, in line with the small impacts of cargo bikes on the environment, but the gains in terms of cost are significant this point is considered further later in the report.
- 2.5.4 To assess the impact of the trial on air quality, Momentum sourced data on NOx emissions and CO2 emissions for different types of delivery vehicles (such as cargo bike, petrol van, diesel van, electric van). Businesses were asked which vehicle the cargo bikes were replacing where they didn't know this, a vehicle type was assumed based on London fleet composition data published by Transport for London.⁷







2.5.5 The average CO₂ emissions per KM travelled were estimated as follows:

Vehicle Type				
Petrol Van	Diesel Van	Electric Van	E-Cargo Bike	
144.9 g CO ₂ / KM	161.2 g CO ₂ / KM	37.1 g CO ₂ / KM	1.6 g CO ₂ / KM	

Average Emissions by Delivery Vehicle Type

2.5.6 For the purposes of this analysis, it has been assumed the electricity has been generated from a range of different sources. The percentage split applied to the sources of energy has been derived from UK National Grid information.

Cost analysis

2.5.7 Momentum has also undertaken research into the wider costs of the project and costs associated with the scaling up of the operation. Data on project costs was shared by CRP – this includes all set up and operational costs. A breakdown of the cost to use Pedal Me's warehousing space and the cost of each delivery has also been considered.

Business engagement

2.5.8 Upon completion of the Mid-point Report, it was agreed between Momentum and CRP that the quantitative data available from Pedal Me didn't capture the fine grain of how businesses have changed the way they make and receive their deliveries through the trial, the proportion of their deliveries that go through the hub, and how Pedal Me consolidates the deliveries it makes across Brixton. Therefore, it was decided to carry out a survey of all participating businesses and conduct phone interviews with the businesses involved in the trial, as well as with Pedal Me, to improve qualitative information on how the trial has been used.







Resident engagement

- 2.5.9 Momentum organised a 1.5-hour-long online workshop to seek residents' views on clean air freight and the trial. 15 local resident groups, local councillors and local campaign groups based in Brixton, Battersea and Bankside were invited to attend.
- 2.5.10 The workshop took place on the evening of 21st February 2023; It was conducted online and was attended by four members representing Renton Close Tenant Resident Association in Brixton, Lambeth Living Streets, Southwark Living Streets and Living Bankside. Invitees who could not attend the workshop were offered an in-person phone interview.
- 2.5.11 Momentum and CRP introduced the trial to participants and offered examples of the sorts of consolidation strategies achieved through it. This was followed by a group discussion focused on the impact of business deliveries and strategies to mitigate those, and views on the trial.

Economic analysis and policy

2.5.12 Momentum reviewed relevant policy and identified areas where policy could be improved to enhance the uptake of consolidation hubs assorted with cargo bike operations such the trial project in Brixton.







3. Clean air freight

3.1 What is the consolidation of deliveries and what are the challenges associated with it?

Consolidation across businesses

- 3.1.1 Consolidating deliveries means pooling together goods that are bound to similar geographical destinations into a single vehicle. Most supplier businesses consolidate their deliveries, because it means fewer vehicles and fewer journeys are needed. For example, suppliers to pubs generally carry beer kegs, wine and spirits for several pubs at once, to save delivery miles.⁸ This is supplier-based consolidation, whereas the objective of the study is often called consolidation of the last mile, since this is the final stretch of the delivery journey and focuses consolidation on delivery addresses to reduce vehicle mileage for the last part of deliveries. Figure 3.1 illustrates how consolidation can work.
- 3.1.2 Businesses operating in the same area generally do not coordinate their orders, which would enable them to consolidate their deliveries. For example, two pubs on the same street are likely to have different drink suppliers, and in a similar way two office occupiers in the same building (or next door to each other) would usually have different suppliers for cleaning products, milk or toilet roll. Deliveries to these businesses may still be consolidated by supplier for example, an office supplier would pool together deliveries of one item bound for a generally similar area but for the 'last mile', this is less efficient than if two offices in the same building used the same supplier.⁹
- 3.1.3 The main barrier to consolidating deliveries within an area is a classic coordination problem: there is little incentive for businesses to work together to reduce the number of deliveries coming to an area; people tend to be busy and moving to a consolidation model means moving away from the long-established way of doing things¹⁰. Delivery costs have been increasing with the rise in energy prices, workforce costs and charges on polluting vehicles







such as ULEZ are additional costs, but they remain too low to incentivise most businesses to consolidate their deliveries with their neighbours. Other behavioural barriers to consolidation include, for example, the appreciation for the convenience of last-minute ordering and just-in-time deliveries or a preference for working with suppliers they have an existing relationship with¹¹. Barriers to coordination across businesses are further explored in the business engagement section.

3.1.4 Consolidation is easier to achieve in new developments. It is no longer unusual for local authorities to require that businesses consolidate their deliveries off-site as a condition to receive planning permission. Where this is the case, organisations tend to rent warehouse space outside the local authority and receive all or most of their deliveries at that warehouse – the consolidation hub. One vehicle then moves all deliveries in a single consignment to their destination, reducing vehicular mileage in more central areas ('last mile')¹².

Consolidation within businesses

3.1.5 Businesses can also consolidate the deliveries they receive by ordering larger quantities less often, or by operating their own consolidation hub. This means that goods that arrive early are held in a consolidation centre until the full consignment is ready for dispatch. But doing this requires storage space, which comes with a cost (and in central London these can be very high as land is in short supply). For example, the Office for National Statistics has calculated that an average cost of 1 square metre of land (to buy) in the London Borough of Lambeth is approximately £8,437 and in Southwark is £8,782. Meanwhile, land prices in Westminster and the City of London are even higher at £16,246 and £17,371¹³. Due to the high prices of land, these solutions are therefore generally only available to larger businesses. Smaller businesses can also ask to receive different deliveries at once – but at the moment this is only possible if their deliveries are being moved by the same supplier or carrier, as different carriers do not share operating systems¹⁴.







3.1.6 Businesses can also reduce the number of suppliers to consolidate their deliveries. For example, restaurants could choose a single supplier for fruit, vegetables, and essentials, or find a supplier that also collects waste – for pubs this means collecting empty kegs and bottles at the same time of delivery. Existing established business relationships may get in the way of this, and it is more difficult to achieve for businesses with highly specific goods. In this case it may make more sense for them to pool orders with other businesses.

Consolidation and mode shift

- 3.1.7 The consolidation of deliveries creates an opportunity to swap vehicles and make the final journey in a vehicle more suited to its local environment this is called mode shift. In city centres this means using smaller, cleaner vehicles, to reduce air pollution and road safety impacts. Micromobility vehicles which include bikes, cargo bikes and trikes can generally accommodate smaller payloads, but are more reliable than larger vehicles because they are less affected by traffic congestion.¹⁵
- 3.1.8 An example of consolidation can be found below in Figure 3.1 (Source: Quarshie et al. (2021). <u>Worth the Weight: Making London's deliveries greener</u> <u>and smarter. Centre for London</u>).









Figure 3.1: An example of Delivery Consolidation

Source: Quarshie et al. (2021). Worth the Weight: Making London's deliveries greener and smarter. Centre for London.


4. Impacts

4.1 Trip figures

- 4.1.1 Table 4.1 below details the total number of trips made by cargo bike during the trial as well as other facts and figures such as the average trip length and the Southwark and Battersea hub split.
- 4.1.2 Table 4.2 details the estimated emissions per KM of different transport logistics vehicles. The cargo bikes produce less than 1% of the CO₂ of a diesel van and roughly 4.5% of the CO₂ needed for a KM of travel of an electric van (using national grid energy split data).

	Trip numbers	Notes
Total Number of Trips	194	993 total KMs
Average Distance travelled	5.7km	Southwark hub to Brixton
Total Trips via Southwark Hub	183	Southwark Pedal Me hub
Total Trips via Battersea Hub	11	Battersea Hub
Consolidated Business Trips	13	Between Trial Businesses
Overnight Trips	111	Minimum 111
Most Trips by Business	111	Stems Wilder (Florist in Brixton Village Market)

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Table 4.1: Cargo Bike Trip Information





Table 4.2: Emissions Information

Transport Logistics Vehicle	CO ₂ Emissions (per KM)
Average Emissions Per Cargo Bike KM	1 6g CO ₂ per KM
Travelled	
Petrol Van Comparison	144.9 g CO ₂ per KM
Diesel Van Comparison	161.2 g CO ₂ per KM
Fully Electric Van Comparison	37.1 g CO ₂ per KM

4.2 Air quality and CO2 impacts

4.2.1 The direct route from suppliers to Brixton businesses was compared with the route from the supplier to the hubs. In the scenario where the hub is used, emissions reductions were recorded for 78.3% of the trips completed. In some cases, the use of the cargo bike hub was adding additional vehicle miles to the overall logistics chain, as the origin supplier would need to make a detour to deliver to the hubs. The number of saved vehicle kilometres that could be measured from the trial data is presented in Table 4.4.3.

Business	No of trips	Original supplier location	KM reduction to Southwark	KM reduction to Battersea	Vehicle (if known)	KM reduction overall
Stems Wilder	111	Southern Cross, Swanley, Kent	0.2	Battersea Hub Not Used	Diesel Van	22.2
Friendship Adventure	16	Aylesbury Road, Aylesbury	15	Battersea Hub Not Used	Diesel or Petrol Van	240
The Courtesan	11	Barking Creek Industrial Estate, Barking and Southbury, Enfield	4.9	Battersea Hub Not Used	Diesel Van	53.4

Table 4.4.3 Vehicle Kilometre Reduction	n from Using the Hub
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London Beer Lab	7	Amazon Delivery (assumed Dartford) and Royston	2	Battersea Hub Not Used	Diesel Van	14
3 Space	9	Viking Direct, RAJA Group, Salford Road, Bedford (assumed)	2	2.2	Diesel Van	19.8
Brixton BID	1	9 Stock Road, Southend on Sea	4	Battersea Hub Not Used	Diesel Van (assumed)	4
Brixton Brewery	5	Amazon Delivery (assumed Dartford)	-4	-1	Diesel Van (assumed)	-20
Federation Coffee	14	Margate	0	-4	Diesel Van	-56
TOTAL						277.4 KM

- 4.2.2 The range of emissions savings depended on a variety of factors such as type of vehicle and, crucially, the location of the original supplier relative to the hub and final destination of deliverable goods. This meant that the emissions savings per business ranges from -9 to 38.7 kg CO₂ throughout the trial period. Negative emissions reductions occurred in instances where the hub location required greater driving delivery distances from original suppliers than through previous logistics routes from original suppliers direct to the end user.
- 4.2.3 Beyond these saved motor vehicle-kilometres, some businesses made onward deliveries to their customers using cargo bikes. This data was not available for our analysis but would represent an additional benefit from the trial. The overall emissions and air quality savings were then estimated for the number of KMs saved.







Emissions Saving compared to diesel van		
CO ₂	109,430.62 g CO ₂	
	(109.43 kg)	
NO _x	74,982.07 mg NO _x	
	(74.98 g)	
PM ₁₀	26,814.575 mg PM ₁₀	
	(26.81 g)	

Table 4.4 Emissions Saving from Kilometre Reduction

Emissions rates used are for diesel vans are: 161.2g CO2 / KM, 110.45 mg NOx / KM and 39.5 mg PM10 / KM. The CO₂ emissions rate was calculated using Momentum's diesel van research on different popular models and averaging. The NO_x emissions rate was taken as an average of official limits stipulated by manufacturers for a range of popular models. The PM₁₀ emissions rate was source from DEFRA.¹⁶

- 4.2.4 As mentioned in our methodology section, the main caveat to this analysis is that it models direct trips. We do not know what route suppliers use to arrive to Brixton or the hub, and whether their trip is part of a chain of deliveries locally. It is therefore possible that, by using the hub, vehicle miles and emissions increase despite the fact that cargo bikes were responsible for the final part of the delivery. That is not to say that these trips had an overall negative effect on air quality or on the local area. Indeed, even where delivering to the hub adds van miles, using the hub may have allowed retiming of the delivery to avoid congestion, therefore achieving shorter journey times and lower emissions, or consolidation in a smaller number of trips, therefore eliminating multiple sources of emissions.
- 4.2.5 For the best possible emissions savings results, deliveries would need to be consolidated, retimed to arrive at the cargo bike hubs overnight (where possible) and cargo bike hubs would be located around the city centre to avoid van miles in the most central, most densely occupied areas. If the scheme was to be scaled up, there would undoubtedly be emissions savings due to the consolidation, retiming and shortening of van-based logistics trips.







4.2.6 During discussions with the businesses, many also noted that the scheme was having a positive effect on their carbon footprint. Three of the trial businesses provided example trip information, which is summarised in Figure 4.1 below.







Figure 4.1: Example Trips by Three of the Trial Businesses







4.3 Traffic congestion

- 4.3.1 As noted above, different factors affect vehicle emissions, and these factors can vary in different temperatures and conditions. Factors affecting emissions can include but are not limited to:¹⁷
 - The specific make, model and age of the vehicle
 - The average speed (related to congestion)
 - The weight of the load
 - Changes in wind and weather
 - Air temperature
 - The way the vehicle is being driven
 - Fuel type and quality
- 4.3.2 As was observed for one business, the hub makes it possible for suppliers to deliver to London outside of a business operating hours. This allowed deliveries to arrive at the Southwark hub overnight and reach their destination by cargo bike the next morning.
- 4.3.3 Whilst in this case the retiming affected only one vehicle (assumed diesel van), if scaled up to a more regional scale it could allow more van trips to be removed during peak periods. If enough trips were retimed it would allow average speeds for the remaining vehicles during rush hour peak periods to increase, resulting in further emissions reductions.

4.4 The role of hub location

4.4.1 As the uptake of the Battersea hub was low, it is very difficult to compare overall emissions between the two hubs. With this caveat in mind, the

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analysis reveals that the distance from the hub to the final delivery location does affect emissions savings, but the location where the deliveries are originating had a much greater impact. If, for example, deliveries are coming from Surrey, then the Battersea hub saw greater emissions savings than the Southwark hub. This is because (all things being equal) the original supplier vehicle would drive further from Surrey to Southwark then from Surrey to Battersea. If, however, the original supplier is located in Essex, then a Southwark hub would have the greater emissions savings as there are fewer vehicle miles travelled to Southwark compared to Battersea and more cargo bike miles are being created from Southwark to Brixton than from Battersea to Brixton. Examples of this can be seen above in Figure 4.1.

- 4.4.2 When comparing the two hubs, there are also other factors at play. For example, cargo bike deliveries from Battersea to Brixton are cheaper than from Southwark to Brixton as the journey distances are generally shorter. Also, Pedal Me operates across the entirety of London and so for them (or any other cargo bike operator with just a single hub) a central location is the most efficient as this allows the greatest possible extent of London to be covered. When asked about possible expansion, Pedal Me stated that a central London hub would always be preferable as a main location, though additional smaller hubs would be useful in particular areas with high concentrations of cargo bike use.
- 4.4.3 In general, the easiest way to ensure emissions savings and lower costs is to locate the last mile logistics hub near (within 3-5km of) the final delivery addresses. Therefore, if the scheme was scaled up to cover large areas of London, several hubs covering different London areas would be the most efficient solution. This would allow shorter van journeys to take place, reducing the amount of traffic in neighbourhoods.









Figure 4.2: CRP's Visit to Friendship Adventure, One of the Users of the Scheme. Credit: Cross River Partnership





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5. Business engagement

5.1 Overview

- 5.1.1 The qualitative business research undertaken by Momentum included survey questionnaires to all eight businesses involved in the trial. In-depth interviews were also conducted with the three businesses which had had experience using both the main Pedal Me Southwark hub and the trial Battersea hub. An additional interview was held with Stems Wilder as this business had used the cargo bike hub scheme the most during the trial period.
- 5.1.2 Table 5.1 details the businesses involved in the trial. Figure 5.1 shows the locations of the trial businesses and the cargo bike hubs.
- 5.1.3 CRP's engagement to recruit participating businesses is summarised in Appendix A.

Business name	Business Type	Location	Additional Notes
Friendship	Pub and Brewery	Coldharbour	
Adventure	T ub and brewery	Works, Brixton	
Stoms Wilder	Florist	Brixton Village	Used the trial
Stems wider	TIONSC	Market	scheme the most
	Charity Led Shared	Canterbury	Used both main
3 Space	Co-Working Space	Crescent,	hub and trial
	organiser	Brixton	Battersea hub
		Brixton Village	Used both main
Federation Coffee Coffee Shop		Markot	hub and trial
		Market	Battersea hub
		Brixton Station	Used both main
Brixton Brewery	Brewery	Dividir Glation	hub and trial
		Road	Battersea hub

Table 5.1: Cargo Bike Trial Businesses







	Business	Canterbury	Used both main
Brixton BID	Improvement District	Crescent,	hub and trial
	Consultancy	Brixton	Battersea hub
	Restaurant and	Atlantic Road	Used storage
The Courtesan	Cocktail Bar	Brixton	space at
		Blixton	Southwark hub
London Beer Lab	Pub and Brewery	Nursery Road,	

5.2 Experiences of businesses

- 5.2.1 The businesses involved in the trial had varying experiences of using the scheme. Some businesses had very positive experiences of using the cargo bikes hubs while others noted operational problems, such as missed deliveries and poor communication.
- 5.2.2 This section breaks down of the experiences of each business.

Stems Wilder

- 5.2.3 Stems Wilder is a florist operating in Brixton Village Market. The business had an overwhelmingly positive experience of using the scheme. It is also the businesses that made most use of the hub, which enabled the most consolidation, re-timing and efficient delivery strategies.
- 5.2.4 The flower supplier, Hoek, operates from the Netherlands flowers first cross the Channel in trucks and are processed in a UK distribution centre in Swanley, Kent, located at the junction of the M25, M20 and A20. The logistics operator then organises van deliveries across London and the wider southeast region, making most deliveries overnight to avoid congestion.
- 5.2.5 For the purposes of the trial, the van operators dropped off the flowers overnight at the Southwark hub. The following morning, flowers were

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delivered by cargo bike to Stems Wilder in Brixton Village Market. This has been a highly effective strategy as it has meant that the van driver does not need to enter Brixton Village Market overnight, which is locked and difficult to access. This has been a huge advantage for the owner of Stems Wilder as they no longer need to organise delivery arrivals at Brixton Village Market overnight. The cargo bike hub makes it easier for businesses to schedule deliveries outside of peak hours. This has clear emissions and congestion saving impacts as deliveries would otherwise need to either arrive at the business owners' house and be further delivered to Brixton Village market or be delivered during daytime hours to the market which would cause added congestion and emissions. Out of hours deliveries is one of the key benefits that cargo bike last mile hubs can offer.

Friendship Adventure

- 5.2.6 Friendship Adventure is a brewery and taproom which has used the hub for both incoming and outgoing deliveries. Friendship Adventure has had a positive experience of using the hub and has highlighted that deliveries made by the cargo bikes have been more reliable and better tracked than the previous deliveries made by cargo van. They have also noted quicker delivery times when using the cargo bikes.
- 5.2.7 Friendship Adventure have also used the Southwark cargo bike hub as a central base for deliveries north of the river Thames. They have sent large consignments into the hub for storage by cargo bike and then delivery on an ad-hoc basis to their customers. This has seen the Southwark hub used as a consolidation centre and a secondary base for operations. By sending beer to the hub in bulk by cargo bike, and then allowing onward deliveries to their customers north of the Thames by cargo bikes, Friendship Adventure have cut delivery costs and have also significantly reduced the number of vehicle trips that would have been previously required to deliver their goods. It is estimated that a total of 401.5km of logistics trips previously made by diesel van have been replaced with cargo bikes.







5.2.8 They have noted that while there are certain goods that cannot be delivered by cargo bikes (such as large grain deliveries or gas cylinders) they have been very satisfied with the trial and would like to continue to use the cargo bike hubs. Friendship Adventure have noted that they now make more deliveries than they used to and are shipping more goods at lower costs. The air quality and traffic savings from their experience of the hub are high, as all of the deliveries were formerly made by a petrol- or diesel-powered van.

Federation Coffee

- 5.2.9 Federation Coffee have used the scheme for their deliveries of coffee beans, which make up around half of their incoming deliveries. They use the bikes to deliver the beans from either the Southwark hub or the Battersea hub and have noted that the deliveries normally take an extra day to arrive as a result, but that this has not affected their business operations.
- 5.2.10 Their supplier found the use of the Battersea hub was more convenient as the bean delivery originates from Margate, avoiding the need to drive into central London.
- 5.2.11 Federation Coffee are not open out of standard business hours they therefore benefited from the consolidation hub opening hours 24/7, which mean deliveries could reach central London outside peak times.
- 5.2.12 Overall, Federation Coffee have been very satisfied with the trial scheme and would like to continue using the scheme where possible, depending on costs.

Brixton Brewery

5.2.13 Brixton Brewery have only used the cargo bike scheme for small, ad-hoc, non-valuable Amazon deliveries. Their experience of using the Southwark hub was positive, however, there were a number of issues reported with using the trial Battersea hub. Chief among them was that deliveries were missing, unaccounted for or damaged when using the Battersea hub. This mostly







stemmed from the fact that the Battersea hub was mostly unstaffed during the duration of the trial. It should be noted that Pedal Me paid for any damages. We were told by CRP that a 'couple of issues' of damaged or missing items also occurred at the Southwark hub earlier on during the trial.

5.2.14 Brixton Brewery did note that an advantage of the scheme was that there were fewer vans in their servicing yard, as cargo bikes take up less space than a standard van. They found that the deliveries took a couple of extra days to arrive at the brewery and that, due to the extra effort caused by using the scheme, they would be unlikely to continue using the scheme in its current form. They noted however, that the trial is a good idea, and they would be keen to use an improved cargo bike consolidation scheme. Brixton Brewery stated that their onward deliveries were too varied in range to use cargo bikes as they delivered across the UK. They were also concerned that bulk deliveries of brewing ingredients could not be delivered to the brewery at the same cost as with larger freight vehicles. Pedal Me are able to collect empty kegs of beer from other businesses so there is some potential for further Brixton Brewery involvement should the company wish to continue to engage the services of Pedal Me.

3 SPACE

5.2.15 3 Space used the trial scheme a small number of times for deliveries of cleaning materials. Overall, they had a poor experience of using the scheme. Items were reported missing when using the Battersea trial hub and this meant that the deliveries made by cargo bike were reportedly less reliable than those previously made by a standard delivery van. 3 Space noted that by using the scheme, there was essentially an added layer of logistics onto the supply chain which caused unnecessary complication, extra delivery time and – had the trial not been subsidised – would have generated additional costs. If 3 Space had used the scheme more often, it is possible that some of these issues could have been rectified as improvements to the trial were made.







- 5.2.16 Towards the end of the trial, 3 Space started to order the goods in bulk and have them delivered to the hub, this then reduced the van trips needed as the goods could be consolidated at the hubs and then sent to 3 Space at the desired time by cargo bike.
- 5.2.17 3 Space was dissatisfied with the service provided, claiming that communication should be streamlined through a "hotline or WhatsApp group" to resolve issues. That said, they see the scheme as a good idea and said they would be very likely to continue using the scheme if this was an option.
- 5.2.18 3 Space noted that the scheme should be used by more businesses and that it could be organised by a local association. A Business Improvement District (BID) was suggested as it was noted that the local council would not have the resources to adequately organise a similar scheme.

The Courtesan

- 5.2.19 The Courtesan, a restaurant and cocktail bar, had a very positive experience of using the scheme. The director noted that the deliveries made by the cargo bikes were more reliable than those previously made by van. They told us that vans suffered delays due to lack of drivers and traffic, and this resulted in failure rates between 5-10%, while there have been absolutely no issues with the scheme. This has meant that the number of missing or damaged items has decreased and that the time taken for deliveries to arrive has also decreased.
- 5.2.20 The Courtesan have noted that the scheme has certainly made their business less polluting and that using cargo bikes for deliveries rather than vans in urban centres is far superior. They also noted that vans often deliver overnight to avoid peaks in traffic which causes businesses staffing problems as they often need an employee to be available overnight. When using the scheme, this has not been an issue as the delivery vans can arrive at the hub overnight and then the cargo bikes can deliver the following day during usual operating







hours. Cargo bikes are able to do this far more reliably as they are not as impeded by traffic.

- 5.2.21 The Courtesan also note other advantages of using the scheme as they are able to hold products in the Southwark hub, confident that a cargo bike will be able to deliver goods within an hour, so a clear acknowledgement that the responsiveness of the cargo bike consolidation strategy was beneficial. This has meant that they have essentially increased the amount of storage space available, and this has had a positive effect for the business as they can rely on the cargo bikes to deliver stock during the busiest periods. They are now running a more efficient 'just in time' delivery model, with stock such as bottles of prosecco held in bulk in Southwark and then delivered to the business when they need it. This has allowed staff to free up more storage space at the business and has meant that just one large order of stock was required from the original supplier delivered to the cargo bike hub, rather than multiple van trips made to the business.
- 5.2.22 Overall, the staff at The Courtesan were very satisfied with the trial and would like to continue to use the scheme. As suggested improvements, they would like to be able to better analyse the emissions savings for their business and highlight that schemes such as this should be increased in scale and organised so that more businesses are aware of the schemes and can take part. They also suggest that the BIDs market these schemes and co-ordinate them at a greater scale.

Brixton BID

5.2.23 Brixton BID did not make significant use of the scheme, although as an office function, not involved in the delivery or purchase of physical items as their core business activity, the characteristics of their business means this is not overly surprising. They used the hub for incoming deliveries of newsletters and leaflets that their publisher, Solopress, would send from Southend-on-Sea via the Southwark hub.







- 5.2.24 Brixton BID found that the scheme was a good idea and that it would have emissions savings capabilities for the operations of the business. They did note that there was an issue with one delivery to the hub, where the delivery was unable to be processed and so was returned to the original supplier.
- 5.2.25 Brixton BID stated that they were somewhat likely to continue using the scheme in the future but that they would not be able to use them for urgent deliveries.

London Beer Lab

- 5.2.26 London Beer Lab were very satisfied with the trial scheme. As with other businesses, they used the hub as a consolidation centre for deliveries coming from different suppliers which could then be grouped together and sent to the business in single cargo bike deliveries. This meant that there were fewer delivery trips arriving at the business, which was helpful.
- 5.2.27 To improve the scheme, London Beer Lab noted that it would be useful if Pedal Me confirmed with London Beer Lab when deliveries arrived at the Southwark hub so that London Beer Lab could be certain that they would receive that particular order with the next cargo bike shipment. They noted that with urgent deliveries they often bypassed the hub as the added layer of logistics did mean that additional time would be needed for a delivery to arrive. Whilst this was helpful to consolidate deliveries, it did mean that urgent deliveries would require more time to arrive.
- 5.2.28 Overall, London Beer Lab would like to continue using the scheme and note that the use of scheme does make their business operations more environmentally sustainable.

5.3 Summary

5.3.1 Overall, of the eight participating businesses, five had a positive experience of using the hub, with one (Stems Wilder) making Pedal Me a central part of







their logistics operations. Two of the businesses had a less positive experience of using the trial scheme with the final business only using the scheme for a very small number of trips.

- 5.3.2 Businesses that made the most use of the trial (such as Stems Wilder and Friendship Adventure) were also most likely to be satisfied with it. Businesses that place regular, scheduled deliveries were more satisfied than those placing deliveries at short notice. We were told by CRP that some businesses didn't achieve behaviour change to bulk order or plan their deliveries in advance, so they were heavily reliant on orders coming in the next working day. This meant that businesses were more likely to be satisfied with the scheme the more they used it as they could rectify any issues that occurred.
- 5.3.3 The strategies that the businesses used successfully included:
 - Retiming deliveries to avoid overnight drop offs at business location.
 - Consolidating deliveries to the hub for onward deliveries.
 - Consolidating deliveries at the hub to drip smaller batches of goods to the businesses when these goods were needed.
 - Using the scheme for "just in time" deliveries.
 - Using the hub as a base for deliveries north of the river using consolidation techniques.
 - Using the hub for additional storage space.
 - Using the hub for reverse consolidation.
- 5.3.4 Whilst the scheme was quite small in the number of businesses that participated and the overall number of trips made, the innovative techniques used by some of the businesses indicate that there is huge potential for cargo bike consolidation hubs in densely populated urban areas. Many of the businesses were able to not only substitute van deliveries for cargo bikes but also used the scheme for more efficient logistics models. This was most notable in the retiming and consolidation of deliveries at the Southwark hub.







Figure 5.1: Locations of Trial Businesses and Consolidation Hubs







6. Resident engagement

6.1 What do residents think?

Major themes

- 6.1.1 The key themes throughout the discussion centred on the need to encourage future cargo bike use in inner London. Many of the attendees agreed that consolidation associated with cargo bike deliveries brough benefits to local businesses, the local community and the environment. The cost saving from businesses by using the scheme was also discussed. The overwhelming majority of the attendees said that they wanted to see schemes like this encouraged.
- 6.1.2 When prompted, some focus group members expressed concern that widespread use of consolidation hubs would concentrate lorry traffic on main access roads or near hub and could be unpopular with local residents. One member told us they lived near a trunk road and would be opposed to seeing more traffic pushed onto it. Meanwhile, no concern was expressed around cargo bike traffic. This is very positive for cargo bike schemes in the future.
- 6.1.3 Exactly how increasing clean deliveries could be achieved was a point of discussion, many residents believed that big businesses have the funds and necessary capital to make changes and use cargo bikes consolidation hubs. While this may be true in terms of capital, the nature of contemporary logistics means that many businesses do not know exactly how their logistics work as the responsibility of moving goods from point A to B is often passed onto a third party (or even multiple third parties). This was well evidenced through the business engagement and also through holding discussions with Pedal Me.
- 6.1.4 An additional key theme that was noticed by the residents was the added benefit cargo bikes have over electric vans from a road safety and street space perspective. Yes, electric vans can reduce emissions and have a







positive impact on air quality to the same extent as cargo bikes, but they require more space and as one resident pointed out, an accident with a cargo bike is much less likely to result in serious injury than an accident with a heavy electric van. It was also noted that in other countries, there are far more pedestrianised streets which require deliveries to take place during early morning hours – and the participants thought London should follow. In addition, it was noted by representatives at the session that electric vans do require large amounts of rare earth minerals for use in their batteries and the processes for extracting these are all environmentally costly (there are also electric batteries in the cargo bikes for assistance, but these are much smaller).

6.1.5 Another key theme centred around wider logistics chains that occur before the "last-mile" phase. It was noted that river freight has been used to great effect for some large infrastructure projects (such as the new London Tidewater sewer). Rail freight was also discussed as a solution to develop, as it would take vehicles off the road altogether. Residents were keen to understand why clean air freight cannot be further developed and enhanced. A potential barrier to this is the need for industrial space in areas of central London. This is a particular challenge for river freight which would require central waterfront spaces in London where the price of land per square metre can be amongst the highest in the capital.

Summary

- 6.1.6 Focus group members took a very positive view on the scheme and were supportive of initiatives to consolidate deliveries and switch to cargo bikes especially if this didn't result in greater concentrations of lorry movements.
- 6.1.7 There was agreement that some types of logistics will always require traditional petrol or diesel-powered freight vehicles but the overwhelming feeling from the session was that cargo bikes could and should in future replace many van deliveries.

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- 6.1.8 Exactly how this could be achieved however was more complicated and residents, whilst citing that big businesses could and should pay, were somewhat sceptical of long-term subsidies to fund cargo bike transitions. Some argued that local authorities should be responsible for encouraging more clean air freight though were frustrated at the lack of funding that local authorities currently have at their disposal to encourage more clean air schemes.
- 6.1.9 It seems then through this exercise that the benefits of cargo bike consolidation schemes across an area could be significant but processes to encourage and establish them can be challenging.



Figure 6.1: One of CRP's In-Person Engagement Visits to Brixton. Credit: Cross River Partnership







7. Costs of consolidation

Cost of industrial land

- 7.1.1 CRP have subsidised this scheme and have paid Pedal Me £12,850 for floor space in the Southwark hub (April 2022 March 2023) plus an additional £3,480 for the Battersea hub (September 2022 March 2023). This equates to an average of £1,360 per month and an average of £78 per square metre per month.
- 7.1.2 By comparison, industrial rents in Southwark over the 2017-2021 period were at £16 per square metre per month (£189 per square metre per month). ¹⁸ ¹⁹
- 7.1.3 This is a Southwark average and industrial rents in Bankside would be significantly higher and have increased between 2017 and 2021. Rents are also higher for smaller units. In addition, Pedal Me offered warehousing space that is staffed with 24/7 delivery access.
- 7.1.4 Each trip was subsidised at an average delivery cost of £29.91. This has allowed the scheme to be free for the trial businesses for all the trips between the hub and the businesses. Businesses only paid for onward deliveries from the hub, or directly to their customers. The cost per delivery could be brought down if more deliveries are consolidated or "stacked" together.
- 7.1.5 Consolidation can save businesses money as it essentially allows for a storage or holding area to be located away from the business premises. In this trial scheme, consolidation has occurred from original suppliers to businesses and also from businesses to other third-party end users. In the case of a cocktail bar taking part in the scheme, prosecco bottles were delivered to the last mile logistics hub in bulk which were then trickled on cargo bikes to the bar whenever new bottles were needed. This saved the bar money as they required less space to store the bottles themselves.







- 7.1.6 Consolidation also occurred between businesses as two or more deliveries from different suppliers could be delivered to two or more businesses in Brixton by just one cargo bike. Pedal Me often organised this consolidation with deliveries to organisations outside the trial, to increase efficiency of trips to Brixton.
- 7.1.7 Consolidating goods in this way requires storage space. Traditional large scale logistics operators tend to consolidate by goods type at large out of town depots where the price of land lower, or transfer them directly from large vehicle to a cargo bike. Cargo bike operators may need to be based closer to their end users and in more central locations, and need to store deliveries until they can be consolidated, which makes the cost of consolidation space is relatively high. This means that for this particular scheme to be scaled up, consolidation by last mile logistics hubs would incur an additional cost compared to consolidation by large van-based logistics operators.
- 7.1.8 London has lost a quarter of its industrial floorspace in the last 20 years²⁰, and coupled with increased demand, the price of industrial land in London is hitting record highs, with the price per square foot increasing in London by 25% in 2022 compared to the previous year as reported by Colliers (Industrial and Logistics) in 2022. Industrial land that is protected by designation by London Government can be viewed <u>here²¹</u>.
- 7.1.9 The high costs of land have been a contributing barrier to the expansion of cargo bike and consolidation services over the last several years.
- 7.1.10 For additional information on industrial rents, the Greater London Authority has published in March 2023 a review of London's industrial land supply, which includes average industrial rents in each borough for different unit sizes. According to this research, average annual rents between 2017-2021 range between £142 in outer London and £246 in inner London.²² This is a useful resource to understand the cost of industrial land, though it remains an average and costs vary depending on site characteristics. In some cases, car







parks and disused retail facilities may be suitable for consolidation hubs, if they can be easily, safely and reliably serviced by larger delivery vehicles and by cargo bikes.

7.1.11 To conclude, the type of consolidation and mode shift tested in this trial creates an additional journey and requires storage space to consolidate deliveries – which will create an additional cost. Some businesses may be able and willing to carry some of that cost, as they benefit from more reliable and sustainable deliveries, otherwise this cost would need to be covered by a subsidy. The level of this subsidy would depend on many factors, including the cost of rent, workforce, vehicle purchase and maintenance, how many deliveries transit through the hub, how long they need to be stored, and to what extent the deliveries can be consolidated.







8. Scaling up

8.1.1 This section outlines ways to increase the uptake of last mile consolidation with cargo bike deliveries. It provides advice to local authorities, logistics companies and other organisations as to how clean air freight solutions such as those promoted in this trial could be encouraged.

8.2 Lessons for future schemes

8.2.1 Since the trial is innovative and without comparable examples in the UK, it is difficult to assess a how a different scheme would have fared. This section offers some pointers for future scheme promoters looking to minimise cost and maximise impact.

Scale and benefits

- 8.2.2 Our section on cost explained that consolidation sees very large economies of scale; the more businesses that take part in delivery consolidation across an area, the more consignments can be consolidated onto a single cargo bike, and the lower the costs per delivery.
- 8.2.3 The trial has remained small scale, with a maximum of eight businesses at taking part in any one point. Unsurprisingly, this also means that the impacts of the trial were also small in scale. This is despite wide outreach conducted by CRP, who engaged with 182 businesses in Brixton.
- 8.2.4 The relatively low conversion rate is an interesting finding, since there were clear incentives for businesses to take part. The trial offered businesses economic, financial and environmental benefits; they had access to central London warehousing space off-site, the option to receive 24-hour deliveries at the hub, and cargo bike deliveries from the hub all of which were free of charge.







- 8.2.5 The size of the trial was limited by cost and management considerations, as Pedal Me charged CRP for each delivery. Keeping the trial to a small size also enabled CRP to maintain an in-depth relationship with participating businesses and troubleshoot operational issues.
- 8.2.6 One way to increase take up could be to offer the trial service to businesses across a wider area. Indeed, the benefits of consolidation would increase if other participating businesses can be served along the same delivery route. In this example, Pedal Me has a nine-mile delivery range around its Southwark hub and already makes frequent deliveries across most of inner London, many of which originate from the hub. In this example, businesses located between Pedal Me's Southwark hub and Brixton could be included in a future consolidation scheme using Pedal Me as a carrier.
- 8.2.7 Therefore, when planning for an area-based last mile consolidation scheme, scheme promoters (such as local authorities or BIDs) should engage early with last mile consolidation providers to understand the optimal operating area for their consolidation scheme.

Battersea hub

8.2.8 The benefits of encouraging a second consolidation hub at Battersea are unproven at this stage. In theory there were some benefits to having an additional hub: suppliers had more options to optimise their route, and a less centrally located hub could avoid vehicle miles in central London. In practice, this was difficult to prove because businesses made little use of the new hub at Battersea. One of the reasons for this was the Battersea hub was unstaffed and delivery drivers where not used to delivering goods there, which made receiving deliveries less reliable. Pedal Me operated from the Southwark Hub only, so deliveries arriving to the Battersea hub added cost – as Pedal Me had to make both a pickup and a drop off journey. However, this cost to CRP may have been offset by the cheaper cost of storage at the Battersea hub (£558







average monthly Southwark price compared to £497 average monthly price at the Battersea hub).

Cost savings from consolidation

- 8.2.9 As noted previously in this report, Pedal Me sought to consolidate deliveries to businesses who were part of the trial with deliveries made to other organisations that were not along the same route. Pedal Me have said that the savings from this operational arrangement were not passed on to CRP.
- 8.2.10 Future trials should agree with delivery companies that cost savings from consolidation are passed onto the client organisation. This would reduce the cost of the trial and further incentivise consolidation.

8.3 What role could policymaking and regulation play in the future?

- 8.3.1 Over the past few decades, public policy has enabled greater reductions in emissions in urban areas. In London, schemes such as the Congestion Charge and Ultra Low Emission Zone (ULEZ) have prompted residents and businesses to invest in cleaner vehicles and drive less. Taxing pollution in this way has helped cargo bikes and other clean air freight by allowing companies a competitive advantage over traditional fossil fuelled freight.
- 8.3.2 Introducing higher chargers on polluting vehicles would be necessary to encourage the use of cargo bikes and consolidation hubs. The more petrol-powered vans cost to operate, the more attractive cargo bikes and consolidation would become. The data collected from this scheme would suggest that this would prompt business to use cargo bikes and consolidation more often. Implementation of road user charging policies are the responsibility of the Mayor of London and Government.
- 8.3.3 Planning policy is also an essential tool to create last mile delivery hubs.London boroughs and the Mayor of London will need to protect the remaining central industrial sites to help with the availability of land for last mile delivery







hubs. The Mayor of London can continue to protect Strategic Industrial Land and inner London boroughs should continue to protect Locally Significant Industrial Land. London Boroughs can also include space for logistics hubs in development briefs or planning conditions for larger developments. It should be noted that requiring industrial development to meet more rigorous air quality standards would be useful, but as a policy it should be combined with subsidies and incentives to allow companies and businesses to make transitions to cleaner freight methods. If an approach is overly punitive, this may result in stifling investment in industrial land, which London will need to retain to make cargo bike transitions possible.

- 8.3.4 Planning authorities also have the powers to promote consolidation through planning conditions of large redevelopment schemes. For new developments, policies on clean air freight should be considered as a potential condition for granting planning permission.
- 8.3.5 Alternatively, policymakers could also encourage clean air freight by helping cargo bike logistics companies rent industrial land. The price of industrial land in London, particularly in central areas, is a barrier to expansion of consolidation and cargo bikes deliveries. Planning authorities could introduce affordable industrial rent requirements, similarly to affordable workspace requirements, to de-risk new last mile consolidation hubs. London Boroughs and the Mayor of London could also make some of their land holdings available to last mile consolidation.
- 8.3.6 At the same time, local authorities and BIDs could act as organisers for consolidation and clean air freight schemes. BIDs could also decide to allocate some of their funds to subsidise the set up, and potentially the operation of last mile consolidation schemes that use zero-emission delivery modes.
- 8.3.7 A list of the main policy interventions is provided in the table below.







Table 8.1: Potential Policy Interventions

Policy measure	Who can do this
Protect remaining industrial land through designation, ensure that any loss is re-provided in new developments	Local authorities, Greater London Authority (GLA)
Encourage the provision of logistics hubs in new developments in local plans and the London Plan	Local authorities, GLA, BIDs
Research and share case studies on how logistics hubs can work with other uses in the same or adjacent buildings, and their impacts on local road traffic and safety	GLA, Transport for London, Urban Design London, Cross River Partnership
Increase the amount of space dedicated to on- street loading bays, which could be used as mini consolidation centres	Local authorities, Transport for London
Require that all business in an area consolidate their deliveries in a last mile logistics hub through the creation of zero emissions freight zones	Landowners, National Government, local authorities. BIDs can encourage this
Require all new planning applications to provide a consolidation strategy and to consider the use of cargo bikes and consolidation as part of this.	GLA, Transport for London, Local Authorities
Relax policy requirements for financial contributions associated with planning applications for last mile logistics facilities	GLA, Local Authorities
Introduce pay-per-mile road user charging to disincentivise the use of vans, especially non-electric	National Government in partnership with GLA and TfL
Ensure deliveries to public sector organisations, or organisations that enter contracts with public sector organisations, are consolidated	Public sector bodies and agencies (e.g., local authorities, NHS trusts, schools)







Sources: <u>Possible: The Promise of Low-Carbon Freight</u>, <u>Centre for London: Making Space:</u> <u>Accommodating London's Industrial Future</u>, <u>Centre for London: Greenlight – Next Generation Road</u> <u>User Charging</u>, <u>CRP Clean Air Villages Initiatives</u>.

8.4 Incentives

- 8.4.1 It is clear from this trial that clean air freight can be successfully implemented across a range of sectors if funding is made available. At this point in time, it remains generally easier and cheaper for businesses to stick with their traditional logistics networks (which mostly operate on fossil fuel vehicles) than switch to consolidated operations using cargo bikes which entail using cargo bike operations. It is also challenging to influence supplier delivery patterns. Perceptions of risk also create a barrier for many businesses.
- 8.4.2 As the trial has shown, the vast majority of businesses are unlikely to change their behaviour dramatically unless and until cargo bikes consolidation schemes are somehow subsidised and/or encouraged. This can be achieved either through subsidising trips (such as in this trial), subsidising industrial land for clean air freight (through planning) or through introducing higher charges for polluting vehicles (for example, by introducing pay-per-mile road user charging).
- 8.4.3 To further encourage clean delivery vehicles, street space should also be further prioritised for micromobility and pedestrians. This would make cargo bikes more attractive compared to electric vans. Currently, transport and logistics infrastructure is designed for traditional fossil fuelled vehicles and to change this will require investment. It is highly unlikely that logistics companies and businesses would take it upon themselves to invest in this unless there were rewards for doing so (or penalties for not doing so). Early signs indicate that through expansions of ULEZ, and changing customer attitudes, some major logistics providers are investing in low carbon delivery modes. However, demand for deliveries has been increasing over recent years, and with this more vans have been manufactured, the majority of which are still fossil fuel powered²³.

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8.5 Organisation

- 8.5.1 Maximising re-timing and consolidation and ensuring cargo bikes can be cost effective will require large amounts of organisation at a local level. Businesses that can consolidate journeys between themselves would be able to share costs of cargo bike delivery and make each cargo bike journey more efficient.
- 8.5.2 During the trial, CRP promoted the scheme to local businesses, and helped managed issues that occurred. When this trial comes to an end, the service will be provided by Pedal Me without subsidy for participating businesses, if they wish to continue.
- 8.5.3 For schemes such as this to be scaled up, an organisation will need to promote the scheme widely. They may also need to procure a supplier and subsidise operations. This could either be done by the local authority or by Business Improvement Districts (BIDs). BIDs do not have policymaking powers, but could choose to direct some of their business rates levy income to help set up consolidation centres with zero-emissions deliveries, and subsidise their operations. Scheme promoters would need to engage with a carrier for the consolidation scheme, and promote the scheme to local businesses. CRP's business engagement (detailed in Appendix A) offers an example of the kind of activities that would likely be required to set up and promote a similar scheme.
- 8.5.4 In town centres without a BID, local authorities' town centre managers could step in – but to do this they will need to be supported by grant funding or be able to raise their own. As discussed, this funding would promote clean air freight strategies and work alongside businesses and other organisations (such as BIDs) to ensure businesses can confidently switch to more clean air freight models in a cost-efficient way.







8.6 Stakeholders to Influence

8.6.1 The table below reviews the key stakeholders to influence to increase take up of Last Mile logistics hubs and what evidence they are likely to need to do this.

|--|

Stakeholder to influence	Evidence needed
Organisations that receive deliveries (e.g., businesses, hospitals, schools)	Evidence that using a logistics hub reduces their AQ and CO2 emissions
Organisations that receive deliveries (e.g., businesses, hospitals, schools)	Evidence of cost savings from using a logistics hub as off-site storage space, reducing the number of orders needed, and other benefits such as the ability to schedule deliveries within business hours and improved delivery reliability
Logistics providers	Evidence that operating a last mile consolidation hub is cost effective – for this to happen they will need the additional rent costs for the hub to be offset by efficiency gains from consolidation and shifting to cargo bike deliveries
Local authorities	Evidence that using a logistics hub reduces AQ and CO2 emissions
GLA and TfL	Evidence that using a logistics hub reduces their AQ and CO2 emissions
Business Improvement Districts (BID)	Evidence that using a logistics hub reduces their AQ and CO2 emissions







8.7 Next steps for the scheme

- 8.7.1 The majority of the trial businesses mentioned that they would like to see the scheme continued and would keep using it. At the time of writing, CRP has already secured another one million pounds from DEFRA to continue clean air freight projects under the new <u>Smarter Greener Logistics programme</u>.
- 8.7.2 While charitable grant funding was essential to road test a last mile cargo bike consolidation centre available to small businesses, subsidising their total running costs in this way would not be sustainable in the longer term.
- 8.7.3 It may be worth exploring a progressive transfer of the Brixton scheme to a local organisation backed by a longer-term source of income. Examples of such organisations could include Business Improvement Districts (BIDs) or local authorities. As the scheme evolves from charitable funding to business rates funding, it would be worth testing whether businesses would be willing to make a direct financial contribution to take part in the service.
- 8.7.4 If local organisations are not willing to pursue the scheme or encourage the consolidation of deliveries, an extension of the trial could be beneficial to help understand different businesses' willingness to pay to take part, and which pricing scheme encourages consolidation for example, businesses might pay a flat charge to take part in the consolidation and cargo bike scheme, which would encourage them to make the most use of it.
- 8.7.5 Pedal Me has successfully built relationships with many of the businesses, which would enable them to continue working with the businesses.
- 8.7.6 However, there will be barriers to this as the businesses would need to pay for the cargo bike deliveries and may not want to bear higher costs than they currently pay for their deliveries. This is particularly challenging for the businesses as they will still need to pay the original supplier to deliver at the hub.
- 8.7.7 Pedal Me have told us that the costs of consolidation may change in the future based on a range of external factors such as industrial rents.







9. Conclusion

- 9.1.1 This report has been produced by Momentum Transport Consultancy in coordination with the Cross River Partnership (CRP) to evaluate the clean air freight trial scheme which operated between April 2022 to March 2023 in association with logistics provider Pedal Me.
- 9.1.2 The review has shown that fewer local pollutants and CO₂ have likely been emitted thanks to this innovative trial project.
- 9.1.3 The project was small scale and therefore the emissions savings generated and shown from this project show that, but rather if scaled up, the benefits in terms of air quality and CO₂ emissions would be significant.
- 9.1.4 The use of the consolidation hub and last mile cargo bike deliveries could significantly reduce vehicle traffic and emissions even further if the scheme were to be scaled up. Many of the businesses have developed innovative ways of using the consolidation hub and the cargo bikes that have allowed greater re-timing, consolidation and efficiency of deliveries.
- 9.1.5 Overall, there were 194 trips made by cargo bike as part of the trial. An estimated 277 motor vehicle-kilometres were saved this was calculated from trips for which supplier origin and the type of vehicle used was known. This analysis assumes direct vehicle trips from supplier to destination in reality, delivery trips are often chained. Vehicle kilometres and emission savings should therefore be understood in this context.
- 9.1.6 Based on the vehicle-kilometres savings, estimated emissions savings during the trial are shown in Table 9.1 below.







Table 9.1: Emissions Savings

Emissions Savings compared to diesel van		
CO ₂	109 kg CO ₂	
NO _x	75 g NO _x	
PM ₁₀	27 g PM ₁₀	

- 9.1.7 All eight participating businesses surveyed noted positive benefits from the scheme and seven in eight would like to continue using it in the future. Regular scheme users were all satisfied with the scheme.
- 9.1.8 Participating businesses were able to use the scheme in a number of highly innovative ways to reduce freight-related emissions and make their logistics operations more cost effective and time efficient. The most successful techniques used by the businesses included:
 - Retiming deliveries to avoid overnight drop offs at business location, saving some operational costs.
 - Consolidating cargo to the hub for onward deliveries.
 - Consolidating deliveries at the hub to "drip feed" smaller batches of goods to the businesses when these goods were needed, reducing storage space at the premises.
 - Using the scheme for "just in time" deliveries.
 - Using the hub as a base for deliveries north of the river using consolidation techniques.
 - Using the hub for additional storage space.
 - Using the hub for reverse consolidation.






- 9.1.9 There were large differences in how participating businesses consolidated their deliveries and made use of the hub and the cargo bikes with businesses quoting operational constraints or challenges as reasons why they couldn't make more use of the trial service.
- 9.1.10 Despite the service being free to businesses and widely promoted in Brixton, many businesses opted for business as usual. Cross River Partnership engaged with over 180 businesses between April 2022 and February 2023, and recruited eight participating businesses.
- 9.1.11 Lambeth and Southwark residents took part in a focus group discussing their views on initiatives to promote clean air deliveries. They had a very positive view on the trial scheme and were very supportive of initiatives to consolidate deliveries and encourage cargo bike use especially if this didn't result in greater concentrations of lorry movements.
- 9.1.12 The trial demonstrated that there is huge potential for cargo bike consolidation schemes to be widely successful. However, it is also clear that there are barriers to large scale expansion, which would need to be addressed to fully realise the potential of such a scheme in the future.

Impact of the trial

- 9.1.13 The success of the trial is illustrated by an estimated 277 motor vehiclekilometres being saved as part of the trial – this was calculated from trips for which supplier origin and the type of vehicle used was known. This analysis does assume that the trips replaced were direct vehicle trips from supplier to destination – in reality, delivery trips are often chained with multiple deliveries on a single vehicle. Vehicle kilometres and emission savings should therefore be understood in this context.
- 9.1.14 Based on the vehicle-kilometres savings, estimated emissions savings during the trial are shown in Table 9.1 above.

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- 9.1.15 All eight participating businesses surveyed highlighted positive benefits from the scheme and – significantly - seven of the eight would like to continue using it in the future. Regular scheme users were all satisfied or very satisfied with the scheme.
- 9.1.16 Participating businesses were able to use the scheme in highly innovative ways to reduce freight-related emissions and make their logistics operations more cost effective and time efficient. The scheme enabled businesses to:
 - Re-time deliveries to avoid overnight drop offs at business location, saving some operational costs.
 - Consolidate cargo to the hub for onward deliveries.
 - Consolidate deliveries at the hub to "drip feed" smaller batches of goods to the businesses when these goods were needed, reducing the need for storage space at the premises.
 - Deliver "just in time".
 - Make more deliveries to their customers by cargo bike.
 - Use the hub for additional storage space.
 - Use the hub for reverse consolidation.
- 9.1.17 The intricacies and individual business operational requirements were highlighted with a wide range of ways in which participating businesses consolidated their deliveries and made use of the hub and the cargo bikes. For example:
 - Friendship Adventure, a brewery, used the Southwark hub as a consolidation centre and a secondary base for operations. By sending beer to the hub in large bulks, and then allowing deliveries by cargo bikes, Friendship Adventure have cut delivery costs and have also significantly







reduced the number of vehicle trips that would have been previously required to deliver their goods.

- Florist Stems Wilder asked suppliers to drop off the flowers overnight at the Southwark hub. The following morning, flowers were delivered by cargo bike to Stems Wilder in Brixton Village Market. This has been a huge advantage for the owner of Stems Wilder as they no longer need to organise delivery arrivals at Brixton Village Market overnight. The cargo bike hub makes it easier for businesses to schedule deliveries outside of peak hours.
- Federation Coffee, a coffee shop, benefited from the consolidation hub opening hours 24/7 are they are not open outside standard business hours. This means deliveries could reach central London outside peak times.
- The Courtesan, a restaurant and cocktail bar, noted that the deliveries made by the cargo bikes were more reliable than those previously made by van. They told us that vans suffered delays due to lack of drivers and traffic, and this resulted in failure rates between 5-10%, while there have been absolutely no issues with the scheme. This has meant that the number of missing or damaged items has decreased and that the time taken for deliveries to arrive has also decreased. The storage space at the hub has allowed staff to free up space at the business and has meant that just one large order of stock was required from the original supplier delivered to the cargo bike hub, rather than multiple van trips made to the business.
- 9.1.18 The service was free for businesses and widely promoted in Brixton, despite this many businesses opted for business as usual. Some businesses quoted operational constraints or challenges as reasons why they couldn't make more use of the trial service. From the 180+ businesses who Cross River Partnership engaged with between April 2022 and February 2023, eight businesses were recruited to participate in the trial.







Residents' views

9.1.19 Lambeth and Southwark residents took part in a focus group discussing their views on initiatives to promote clean air deliveries. They had a very positive view on the trial scheme and were very supportive of initiatives to consolidate deliveries and encourage cargo bike use – especially if this reduced large concentrations of lorry movements.

Lessons Learnt

- 9.1.20 The trial demonstrated that there is huge potential for cargo bike consolidation schemes to be widely successful. Barriers to large scale expansion do exist, but addressing these should fully realise the potential of significant upscaling of the scheme in the future.
- 9.1.21 An organisation needs to encourage scheme take up (as CRP did). Logistics forms the backbone of many small and medium businesses' operations, and fully transitioning to a consolidated cargo bike scheme can be seen as too big a risk. This is further exacerbated by other external uncertainties facing businesses in the UK. Business Improvement Districts (BIDs) would arguably be best placed to do this from the private sector, while local authorities would also be ideal, provided enough funding could be secured.
- 9.1.22 Support needs to be made available to encourage businesses to transition away from traditional fossil fuel freight vehicles and key to achieving this is putting some organisational structure in place. Policies restricting the use of fossil fuel freight vehicles would help with this shift. Examples of this include limiting the number of fossil fuelled deliveries to developments at planning through planning conditions and further increasing air quality regulations such as the Ultra Low Emission Zone (ULEZ).
- 9.1.23 Logistics operators are unlikely to shift to clean vehicles unless there are positive financial implications for doing so. Current logistics infrastructure has







been mostly based around fossil fuel vehicles and will require the policy framework to further encourage this shift.

Recommendations for further development

- 9.1.24 The policy framework should strongly encourage businesses and logistics providers to invest in cleaner deliveries. Policies that should be considered include the following:
 - A new charging schedule for polluting vehicles in town centres and cities This could be achieved through already existing mechanisms (e.g. ULEZ), or preferably through smarter charging mechanisms, such as a comprehensive distance-based road user charging system to replace the current congestion charge. The Government and the Mayor of London should work to deliver this change.
 - An increased focus on the retention (and where needed, expansion) of industrial land in strategic locations, especially near town centres, which are key locations for cargo bike hubs. To achieve this, the Mayor of London and local authorities should designate additional industrial land as Strategic Industrial Land (SIL) or Locally Significant Industrial Sites (LSIS).
 - Planning authorities should encourage clean air freight as a planning condition for new developments. As part of this they should ask applicants to put forward cargo bikes delivery strategies.
 - Funding should be made available to local authorities or BIDs to promote clean air freight transitions. Long term (5-10 years) sustained funding should be provided for cargo bike schemes that can reach a significant proportion of local businesses. Economies of scale are vital in logistics, and these can only be achieved through co-operation of local businesses and groups.







- Subsidies and scrappage schemes for small businesses to trial cargo bikes can be highly effective. This would further promote the use of the bikes and, once new patterns are established, can become cost efficient for businesses who would no longer require subsidies. The Mayor of London should boost use of these schemes, which would also require Government funding (or the devolution of taxes, so the Mayor can raise this revenue themselves).
- Greater investment in clean air freight infrastructure is ultimately needed. This could include but is not limited to Government investment in rail freight infrastructure upgrades and investment in river freight – especially upgraded dock space and encouraging the electrification of riverboats.
- 9.1.25 Overall, the trial scheme showed there is significant potential to consolidate business deliveries across an area and switch to a zero-emissions mode for the last mile. This was seen in innovative logistics techniques used by businesses across a variety of sectors. There are also barriers to the expansion of consolidation schemes, which include the price of industrial land in central locations, current logistics systems and infrastructure, and a lack of support, information and incentives to encourage businesses to switch to cleaner last mile deliveries.
- 9.1.26 These issues will need to be addressed to unlock the potential that consolidation and cargo bikes can provide, but this will require organisation, long-term funding, and changes to the policy framework outlined in this report.







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https://www.smmt.co.uk/2021/05/van-growth-drives-uk-commercial-vehicle-parc-torecord-highs/







APPENDIX A – CRP STAKEHOLDER ENGAGEMENT

Provided by CRP



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CRP Stakeholder Engagement

Summary

CRP has now concluded all business engagement and engaged with 182 businesses in Brixton and the surrounding area in total, from the date of the project's inception.

CRP's Business Engagement & Scheme Users

CRP officially launched the micro-logistics hub that services Brixton on Monday 11th April 2022. The first deliveries were made through the hub on Tuesday 19th April, by Stems Wilder, a florist in Brixton Village. As of February 2023, eight businesses are using the micro- logistics hub scheme.

CRP has engaged with 182 businesses in Brixton and the surrounding area, up to the end of February 2023, from the date of the project's inception. This has been achieved through a combination of emails, phone calls, social media messages, inperson engagement visits and in-person events.

From April 2022 to October 2022, CRP engaged with a minimum of 148 businesses in Brixton and the surrounding area.

Between November 2022 and February 2023, CRP has engaged with 33 additional businesses in Brixton and the surrounding area, where conversations with decision-makers have taken place and understanding of a business's deliveries has taken place.

47.06% of these 33 new businesses between November 2022 and February 2023 have been moderately or strongly engaged with.

Direct messages on social media platforms, such as Instagram, have enabled CRP to contact businesses who are more responsive via these channels than via email or phone calls.

28.57% of the 182 businesses have been moderately or strongly engaged with, where conversations with decision-makers have taken place and understanding of a business's deliveries has taken place.

The sectors that CRP has engaged with most actively has been Accommodation and Food Service Activities (e.g., restaurants), Consumer Goods & Services (e.g., coffee shops, breweries), Professional, Scientific and Technical Activities (e.g., architects, designers, cleaning services), and Wholesale and Retail Trade (e.g., suppliers for office and cleaning items).

The reason for improved engagement with the Accommodation and Food Service Activities (e.g., restaurants) and Consumer Goods & Services (e.g., coffee shops,







breweries) sectors could be due to influential contacts, such as Brixton Village, introducing CRP and the project to their traders. This led to e.g., more restaurants responding to CRP's emails and phone calls to discuss the scheme with CRP. Engagement rates with coffee shops, as part of the Consumer Goods & Services sector, also increased possibly due to their opening hours and CRP being able to speak to these businesses during the day.

Below details a table of the businesses signed up to the project and how each organisation is using the scheme.

Business Name	Purpose of Use and Items	Deliveries and/or Collections (SE1 Hub in Blue; Battersea Hub in Orange)	Frequency	Regular vs ad- hoc	Starting month
Stems Wilder	Flowers, dry flowers and homeware items delivered. Collection of reusable packaging to be sent back to Netherlands for reuse.	Deliveries and Collections	2-3 times per week.	Regular (Wednesday and Saturday), with occasional ad-hoc	Apr-22
3Space	Cleaning supplies	Deliveries	Fortnightly – Monthly	Ad-hoc, when stock is low	Apr-22
Friendship Adventure	Soft drinks and snacks delivered. Collection of cans of beer.	Deliveries and Collections	Fortnightly (deliveries) and quarterly (collections)	Ad-hoc, when stock is low	May-22
Brixton BID	Newsletters	Deliveries	Monthly	Ad-hoc, when printing needed	Jun-22
Federation Coffee	Coffee beans	Deliveries	Weekly	Regular (Wednesday)	Jun-22
The Courtesan	Cases of wine	Deliveries and Collections	Weekly	Ad-hoc, when stock is low at locations they service or at the restaurant/bar	Jul-22
Brixton Brewery	Non-urgent Amazon deliveries	Deliveries	2 times per week	Regular (10am Wednesday and 10am Friday)	Aug-22
London Beer Lab	Non-urgent Amazon deliveries	Deliveries	Monthly	Ad-hoc	Sep-22

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Table 1: Businesses Signed Up to the Project and How Each Organisation is Using the Scheme.





Business Feedback

Businesses have been generally very positive about the use of the hub, which has enabled them to:

- Reduce the number of non-urgent deliveries they receive each week through consolidation at the hub
- Support them through changes in night-time security at Brixton Village
- Free up storage space with off-site storage
- Accept faster turnaround time for outbound deliveries to their customers across London
- Reduce the number of deliveries through higher spend on fewer orders each week
- Continue to receive on-demand delivery when urgent and needed, according to opening hours

There may have been themes that showed why the businesses that signed up to this CRP scheme found it suitable, where others did not:

- Knowledge and control of their supply chain, with regular ordering patterns, where they could easily make small changes to their ordering process with minimal disruption to when they received goods
- Trialling with just one of the businesses' suppliers was a common theme amongst the businesses, to test how it works and how it can be integrated into current operations
- Taking advantage of the cost benefits of increased storage and free journeys, particularly seen by Courtesan and Friendship Adventure using the SE1 hub
- Re-timing and limited urgency, where some of the businesses were willing to consolidate and wait for orders to come in one journey (e.g. Brixton Brewery), avoid missing deliveries (e.g. Stems Wilder, Federation Coffee)

Based on CRP's engagement and feedback, the two main barriers for businesses to sign up to this scheme were that it required too much change to their current business practices. There was reluctance from people within the businesses to change their current delivery processes, which have been working for them well so far and potentially for a long time, and therefore this was seen as an operational risk to the business (e.g. missed deliveries). There was also a challenge with time required to participate in the project and even join the scheme, for example, through additional supply chain tasks such as changing addresses, keeping track of deliveries, or working out which suppliers to participate in the scheme.







Businesses were more likely to respond and engage with CRP if:

- The information was forwarded to them by a familiar contact or organisation (e.g. CRP's contact at Brixton Village).
- The business' sustainability or operations team were included in the conversations.
- Lambeth Council's and Brixton BID's support were mentioned during initial conversations.

Businesses were less likely to respond and engage with CRP if:

- There was no prior communication via email before speaking to business via phone call.
- There was no prior communication via email or phone call before speaking to business face-to-face during in-person business engagement.
- CRP shared a large amount of information about the trial at the initial engagement stages (overcomplication of the concept).
- Cargo bikes and their capacity were not explained (many businesses did not know what cargo bikes look like and how much cargo they can transport).



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