**On track for sustainable logistics:** Integrating Rail Freight into London's deliveries



**Delivering London's Future Together** 



Client: Cross River Partnership Our ref: 24288601 March 2023 – Full Report



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# Acronyms used in Report

B2B	Business to Business	GWR	Great Western Railway (TOC)	тос
BEIS	Department for Business,	HGV	Heavy Goods Vehicle	
	Energy and Industrial Strategy	ICRF	InterCity RailFreight (Company)	TPH
BID	Business Improvement District	LGV	Light Goods Vehicle	TSGN
CAF	Clean Air Freight Project	LNER	London North Eastern Railway	
Capex	Capital Expenditure		(TOC)	ULD
CO2e	Carbon Dioxide Emissions	LTL	Less than Truck Load	VSTP
CRP	Cross River Partnership	LTP	Long Term Planning (Timetable	
DEFRA	Department for Environment,		Process)	WTT
	Food and Rural Affairs	MSRS	Mode Shift Revenue Support	
DfT	Department for Transport	MVP	Minimum Viable Product	
EAS	Engineering Access Statement	NHS	National Health Service	
EMR	East Midlands Railway (TOC)	NOX	Nitrogen Oxide	
EV	Electric Vehicle	NR	Network Rail	
FMCG	Fast Moving Consumer Goods	NRC	National Rail Contract	
FMU	Freight Multiple Unit (i.e. a train	Opex	Operational Expenditure	
	of multiple cars with no	ORR	Office of Rail and Road	
	locomotive, designed to carry	PM	Particulate Matter	
	freight)	PSC	Passenger Service Contract	
FOAK	First of a Kind	R&D	Research and Development	
FOC	Freight Operating Company (i.e.	RAG	Red Amber Green (Ranking)	
	a freight train operator)	ROSCO	Rolling Stock Company	
FTL	Full Truck Load	STP	Short Term Planning (Timetable	
GBR	Great British Railways		Process)	
GBRf	GB Railfreight (FOC)	SWR	South Western Railway (TOC)	
GBRTT	Great British Railways Transition	TfL	Transport for London	
	Team			

OC Train Operating Company (i.e. passenger train operator) PH Trains Per Hour SGN Thameslink Southern and Great Northern (Franchise) ULD Unit Load Device STP Very Short Term Planning (Timetable Process) VTT Working Timetable





# **Introduction and Context**

0.3

This study investigates the opportunity to utilise existing station infrastructure in Southwark and Lambeth to support the efficient and sustainable delivery of freight into Central London using rail.

It was commissioned by Cross River Partnership (CRP) and Impact on Urban Health to explore how rail freight solutions can support their goals of reducing polluting roadfreight vehicles and achieving better air guality for residents of London.

The study builds on the findings from CRP's and Momentum Consultancy's Rail Freight in London Feasibility Study (2022), identifying areas where the evidence base needs further development, such as the suitability for stations within the study area for accommodating rail freight.

This study presents the **strategic case** for integrating rail freight into existing supply chains from different stakeholder perspectives. Achieving modal shift of freight from road to rail can play an important role in national and local objectives to **reduce carbon emissions and achieve net zero by 2050, improve air quality and reduce congestion**. Increasing rail freight **increases rail industry revenues and can utilise spare network capacity**.

# **Market Engagement**

The freight and logistics market are in support of exploring alternative logistics concepts to complement road-biased logistics, but **only if it is a compelling proposition and does not increase the overall cost of distribution.** 

There are several externalities at play impacting the reliability and cost of road transport. A shortage of HGV drivers and equipment, rising fuel prices, increasing traffic congestion and emissions regulations is pushing the logistics sector to explore alternative delivery solutions. The rise of lowvolume, high-margin markets requiring fast delivery such as fast-fashion were identified as being suitable for fast rail freight.

However, rail introduces additional handling into the supply chain which adds time, complexity and costs, in comparison to roadbased hub and spoke distribution networks.

Market engagement outlined the need for dedicated logistics infrastructure and storage space to support consolidation activities and transfer to last mile LGV's, EVs or cargo bikes, especially where high volumes are envisaged.

#### **Station Assessment**

Stations need to be able to meet multiple requirements for accommodating rail freight, in the form of train operations (e.g. how long does the train have to load or unload), platform operations (e.g. where is the freight stored / transferred) and access to and from the street

The rail network in the study area (28 stations) is dominated by frequent commuter trains, with little opportunity to accommodate freight. A shortlist of five stations has identified two credible options for future study:

- Waterloo: The existing station is well connected to the wider railway network. Being a terminus station with several platforms, there is opportunity for loading and unloading at quieter times of the day. The station does allow for a segregated, step-free route for freight from selected platforms to the street which can be used by micro-freight vehicles. There is also available space beneath the platforms for storage and consolidation.
- London Bridge: This station is also expected to have suitable facilities for transferring freight between platforms and street level, but access to the wider rail network more challenging than Waterloo.

# **Delivery Concepts**

Two complementary delivery concepts have been developed to formalise the recommendations and action plans for developing rail freight potential in the study area. These concepts represent two levels of investment and benefits realization. Both can be developed in parallel.

#### "Parcels as Passengers"

Using **unused space on existing passenger services** to move small volumes of goods on existing passenger trains between the South West (such as Exeter and Southampton) and London Waterloo.

This will likely include carrying **individual parcels** in non-passenger areas of a train (e.g. a lockable cupboard) with couriers carrying out the loading and unloading at stations.

#### Pros

- Low risk
- Low Capex / Opex required
- Model is proven on GWR/EMR

Equivalent

HGV's removed

per annum

# Cons

- Low volumes only
- Reliant on TOC engagement
- Low logistics carbon reduction / emissions savings due to low volumes

#### "Dedicated Freight Multiple Unit (FMU)"

Using a **full** repurposed passenger train to carry larger volumes of freight from strategic freight hubs (such as in the Midlands) into London Waterloo.

These trains can carry **roll cages and ULD's** which can be easily loaded and unloaded at stations. This concept may require modifications at stations to handle larger volumes efficiently.

#### Pros

- Low-Medium risk
- High logistics carbon emissions reduction from removed HGV's
- Can be tailored to meet needs of logistics industry

#### Cons

- Roll cages may create inefficiencies
- May not be enough space at stations for logistics
- High Opex costs
- Requires WTT pathing for reliability



Further detail on the methodology for emissions and vehicle saving calculations is located in Section 4: Delivery Concepts.





#### **Key Findings & Recommendations**

The parcels as passengers concept is the recommended option of the two assessed. It will require CRP to work with a third party to develop the proposition, identify routes and customers and work with TOCs to deliver the concept. Possible routes could include Southampton and Exeter to London Waterloo.

Parcels as passengers has lower barriers to entry as existing rolling stock is already in operation and the requirements to transport smaller volumes frequently could take advantage of surplus luggage and/or space on TOCs' services. The dedicated FMU concept requires the procurement / leasing of suitable rolling stock that is modified to handle light freight.

Parcels as passengers does not require dedicated logistics infrastructure at stations. Therefore requirements are expected to be far lower in comparison to the FMU concept. As a result, lead times may also be shorter. However, this trial will require considerable stakeholder engagement by CRP to secure buy in from the passenger TOCs, which will take time. Implementation of either concept would bring environmental and economic benefits whilst supporting national and local government in achieving transport decarbonisation.

Benefits from carrying parcels with this concept may start small, but include an opportunity to reach scalability. Utilising surplus capacity on passenger services could reduce LGV and HGV movements between London and the South West. If scaled to multiple long-distance services per day, this could represent a significant carbon saving.

Trialing a **dedicated FMU concept** for a number of months will require a large operating budget. Without investment from FOCs, enhanced Mode Shift Revenue Support (MSRS) or rail innovation grants from the DfT, the short-term barriers are likely going to persist into the medium term.

This report has set out the station requirements to handle dedicated FMUs. CRP should engage Network Rail and enquire about the suitability of London Bridge and London Waterloo for a FMU trial service in future.

Other locations in London that are outside of Lambeth and Southwark might provide more suitable infrastructure and be deserving of further research. It is recommended that following this report, a **dedicated working group** for London should be set up, to facilitate discussions between funders, logistics companies, infrastructure providers, operators and advisors.

This can provide continued momentum and support development within this space, ensuring a constructive forum where concepts and issues can be debated and issues resolved The findings from this study are applicable across London beyond the study area.



**1** Introduction and Context

# Purpose and objectives of this study

Cross River Partnership (CRP) – in partnership with Impact on Urban Health – have contracted Steer to identify the potential for rail freight at two key rail stations within the London Boroughs of Southwark and Lambeth.

The following objectives have been defined for this study:

- Conduct in-depth research on what stations within the two boroughs can do to enable rail freight and last mile solutions.
- Determine what is needed to understand if rail freight could be a viable delivery method.
- Engage both logistics and rail industry stakeholders to obtain market insights and feedback.
- Provide a framework for the procurement of rail freight at stations.
- Recommend a detailed action plan for a specific rail freight trial to be implemented upon completion of this study.

Endnotes can be found in Appendix A at the end of this document.

# **Clean Air Freight**

This study takes place in the context of the Clean Air Freight (CAF) project, which is funded by **Impact on Urban Health** and aims to help the freight sector to deliver clean air as part of the Guy's and St Thomas' Foundation<sup>1</sup>. The project seeks to minimise the harmful emissions from freight within the London Borough of Lambeth and the London Borough of Southwark.

The project aims to prepare for more rail freight deliveries into London, including investigating the potential of passenger trains, and also trial zero emission last mile logistics from a centre in South London.

By researching the challenges and potential for London stations to be used for rail freight, this new Clean Air Freight project will help businesses and logistics companies considering rail freight understand if it could work for them.

### **CRP problem statement**

CRP commissioned Momentum Transport Consultancy in 2022 to complete a Rail Freight in London feasibility study<sup>2</sup>.

The study aimed to identify opportunities for rail freight in the context of sustainable last mile solutions, helping to enable businesses and organisations to incorporate rail within their supply chains to service city centres more sustainably in support of reducing emissions and improving local air quality.

Stakeholders in various business sectors are looking for viable solutions and guidance on how to enable rail freight into urban centres, in support of onwards last mile deliveries.

Similarly, there is little instruction relating to rail stations which can support rail freight into urban centres, particularly from an onward delivery perspective. This includes the limited availability of necessary information around platform capacity, station staffing, loading and unloading operations, space for logistics operations and consolidation, as well as compatible last-mile delivery modes with station infrastructure.



On track for sustainable logistics: Integrating Rail Freight into London's deliveries



# Approach and structure of this report

The diagram below sets out the approach taken by Steer to deliver this study. This report is structured to summarise the activities and findings from each stage of the study.

# Section 1: Introduction & Context

- Reviewed and summarised the findings from Momentum Consultancy's rail freight report, with the purpose of identifying areas where the evidence base needs further development.
- Reviewed existing rail industry and freight sector reports to provide a concise summary of the strategic case for rail logistics at stations.
- Outlined how urban rail logistics could connect into wider logistics operations and delivery methods.

#### Section 2: Market Engagement

- Engagement and interviews with logistic sector representatives.
- Engagement and interviews with rail industry representatives.

#### **Section 3: Stations Suitability Review**

- Identified suitable stations within Lambeth and Southwark boroughs, and review their operational capability.
- Site visit of London Waterloo station.

#### **Section 4: Delivery Concepts**

 Identified and developed two rail freight delivery concepts, that best deliver benefits for the study area.

#### Section 5: Findings and Recommendations

- Summarised the key findings and implications obtained through the study.
- Developed a framework and options for the procurement of rail freight services within the London Boroughs of Southwark and Lambeth.
- Identified actionable next steps to take forward beyond this study, in support of continued development through a proof of concept exercise in a live rail environment.



# Methodology

Momentum's London rail feasibility study (see Endnote 2 for a link to this document) aimed to identify the potential for rail freight at stations by reviewing the **opportunities and challenges** of utilising rail for the delivery of different types of freight into Central London. The Momentum study:

- 1) Reviewed **case studies** to understand how rail freight can be utilised for different types of goods.
- 2) Conducted **stakeholder engagement** with those involved in a rail freight supply chain.
- Conducted a "Goods Typology Assessment" to understand the markets that are most likely to be served by rail freight.
- 4) Considered the suitability of Central London stations by analysing the infrastructure available on site to accommodate rail freight; and analysing the potential last-mile catchment from these stations via walking and cargo bikes.
- 5) Considered the "Day in the life of a parcel" which identified how rail freight would add and/or change the existing logistics chain of freight.

# **Opportunities**

- Competitiveness of rail freight vs road freight will continue to increase due to increasing constraints on road freight (fuel cost, driver shortages, congestion, cost of London's Ultra Low Emissions Zone) and the comparative advantage of rail freight (direct access to city centres, new trains can outpace trucks).
- 2) Logistics suppliers and rail users have been showing an increased interest in rail freight in recent years, through the multiplication of trials in new services and private sector investment in rail freight rolling stock such as converted passenger trains for high speed, light freight.
- There is some existing evidence of rail being utilized for light logistics in markets such as for medical and time sensitive goods.



# **Challenges**

- There is a still a significant challenge in the comparative advantage of road freight over rail – recent trials which were reviewed in this study have since been abandoned as road freight was a more flexible and less expensive option.
- 2) Finding **sufficient traffic/volume** of goods to move to make the service economically viable in both directions.
- Resistance to change. Road freight is strongly embedded in supply chains that the infrastructure, organisation and economic models for logistics have been developed around it.
- 4) Large infrastructure requirement and associated costs for freight companies to set up a rail equivalent.
- 5) The interface between the train and onto last mile road vehicle needs to be simple, fast and with minimal handling.
- 6) Plurality of **stakeholders** and their competing interests and requirements.
- 7) Conflict between passenger and freight movements on the railway and at stations, with passenger markets the default for stations.



#### **Momentum recommendations**

Momentum's study outlined four key recommendations:

- 1) A **coordinated rail freight forum** to bring together the key players across the rail industry, freight operators, local, regional and national policymakers, and business voices.
- 2) A long-term **collaborative trial** involving more than one freight operator working together with Network Rail, Transport for London, the local authority, and Business Improvement Districts.
- The adaptation of goods bags to enable them to sit safely on train seats and to maximise the capacity of repurposed passenger train carriages for light freight.
- 4) The longer-term redesign of train carriages to bring seats onto rails, enabling them to easily be stacked into one side of a carriage and maximise space for roll cages within certain carriages – this requires standardisation of requirements, potentially considering containerisation solutions.

# Steer proposed areas for further research in this study

Steer have built on the opportunities, challenges and recommendations identified by Momentum, through further desktop research, engagement and analysis:

- The Momentum study considered the benefits of rail freight improving air quality in London. However, it did not investigate and quantify the opportunities for the rail industry or existing logistics providers. This study has further examined the strategic case for rail freight by exploring the rationale, objectives and critical success criteria from multiple stakeholder perspectives.
- 2) The Momentum study started to explore current road-based delivery models and how a rail leg could be introduced. This study will seek to understand how rail freight at stations could connect into the wider logistics network for two concepts: Parcels as Passengers, and Dedicated Freight Trains (see 1.6). This will involve identifying and examining the kev dependencies which need to be overcome to make rail freight competitive such as the volumes required, drop density, economies of scale and cost per parcel.

This study has also:

- 3) Conducted a further assessment of which markets could be supported by urban rail freight flows into South London (including Parcels, Perishables, Time Critical, Linehaul) and provided reasoning why other markets have been discounted, such as construction materials.
- Revisited previous station trials and highlighted key learnings as to what may have prevented them from materialising into a commercial service.
- 5) Provided greater consideration of the suitability of stations in the London Boroughs of Lambeth and Southwark, by analysing the infrastructure available on site to accommodate rail freight and opportunities for last mile. A shortlist of 5 stations have been reviewed to assess their potential for being utilised for freight services.





# Strategic objectives of rail freight

An array of stakeholders will play a role in delivering an effective rail freight solution for London. National government, Transport for London, local authorities, the railway industry and logistics suppliers have continued to show an increased interest for rail freight in recent years, evident through recent research, publications, trials and stakeholder engagement.

However, it is also evident that stakeholders competing also have interests and requirements, and no one stakeholder can fully oversee and deliver a solution. To the right are a summary of the potential strategic and commercial drivers (in bold) behind why a stakeholder may desire to seek rail freight solutions. To encourage collaboration, this report investigates the potential objectives from different viewpoints to understand overlaps, where there are conflicts. opportunities and challenges.

Appendix B identifies the key considerations by stakeholder to deliver an effective rail freight solution at stations. These considerations, posed as questions, informed factors to consider in the market engagement and station suitability reviews.

# Summary of stakeholder objectives and opportunities

#### National Government

- Reduce carbon emissions and achieve net zero by 2050
- Reduce congestion and improve resilience of national highway network
- Support macro-economic growth objectives from increased efficiency and reliability of freight movements

# **GBRTT and Network Rail**

- Achieve modal shift growth targets
- Utilise spare capacity on rail network resulting from reduced passenger demand, increasing track access charge revenue
- Utilise unused space at or adjacent to stations – increasing rental income from station charges

# Train Operating Companies (TOCs)

 Opportunity to diversify revenue streams by utilising spare capacity on existing passenger services for freight, if there are commercial incentives, through GBRTT<sup>3</sup>

# Rail Freight Operating Companies (FOCs)

• Diversify market offering – if commercially viable

#### Local Government Authorities

- Improve local air quality
- Reduce road congestion deliver car-free urban centres, and improve road safety
- Attract new businesses by offering an attractive delivery servicing offer
- Redevelop urban space for multi purpose usage

# **Freight and Logistics Providers**

- Exploit opportunities to improve operational (and therefore commercial) efficiency by delivering at a lower cost per unit than existing models
- Diversify market offering and cope with growing demands and needs from freight customers, such as next day delivery – if commercially viable

#### Businesses/end-users

 Ensure they directly benefit from the efficiency gains and ensure freight is delivered quickly, reliably and is costeffective compared to existing options.





# **Existing Distribution Models**

1.4

In order to understand how a new rail freight at stations offer would fit into the market, it is needed to better understand how the existing express freight market works. The 'market' is a collection of primarily road based transportation services that move goods to time, or day-defined delivery schedules through a **hub and spoke model**. The most recognisable logistics providers within city centres can be found in the parcels market, which consist of global players such as DPD, UPS, DHL, FedEx, Royal Mail, Evri and Amazon.

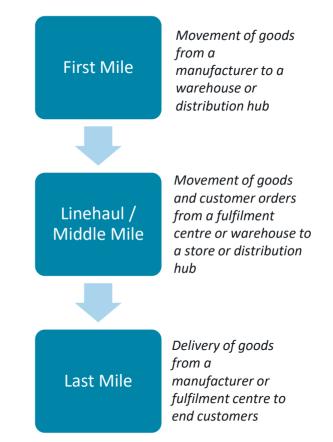
This service range encompasses direct point-topoint Full Truck Load services (FTL), where one vehicle moves goods for one shipper, from one point to another, and Less Than (truck) Load consolidation services (LTL), where many small shipments from different shippers are transported on one truck. It is important to note that express logistics is a mature market, having operated for several decades with large scale sortation warehouses and infrastructure primarily based around the strategic road network. Some market players such as UPS have key sortation hubs which are located adjacent to operational railway lines for example UPS Kingsbury hub and Stanford-Le-Hope.

# How rail could fit into the model

Rail freight at stations is unlikely to be able be a replacement for a) the end-to-end supply chain solution, or b) the logistics providers that undertake express logistics services.

The most credible proposition for rail is to undertake the **linehaul** part of a network, where trains bring volumes of freight in to the London Boroughs of Southwark and Lambeth in place of trucks.

However, consideration must be made to assess the 'hub' where the goods are going to be dispatched from, its proximity to a suitable railhead (**first mile**), and the implications of any additional handling needed. How the goods are then dispatched to the customer (**last mile**) must be taken in to account, once the freight has arrived at a station within the boroughs. Overall, the inclusion of rail freight within a hub and spoke model should not increase the overall cost of distribution, if it is to be a viable alternative in support of market adoption.



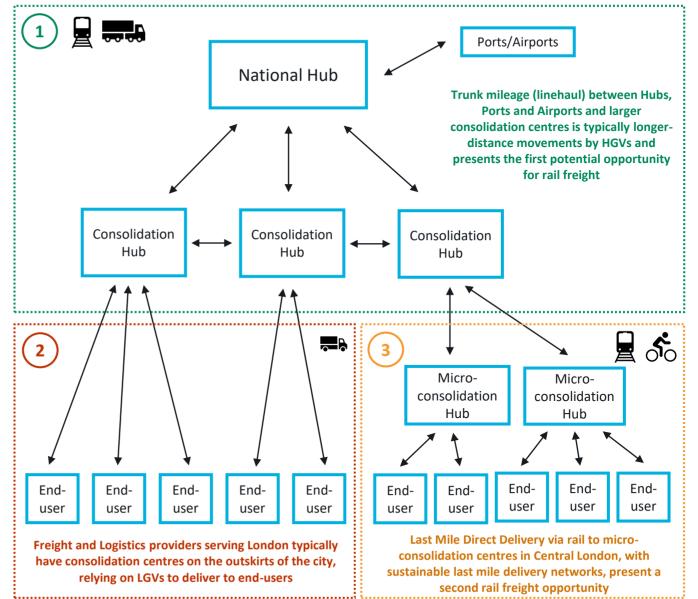




# **Opportunities for Rail Freight**

Current hub and spoke distribution models are circular in nature. They serve to pick up of new deliveries from businesses/sellers or collecting freight from international gateways. Freight is brought to a consolidation hub for sorting. This could involve freight passing through multiple hubs to bring freight closer to the end user, consolidating with other freight headed for the same end-destination. As discussed previously, replacing linehaul (the trunk milage), with express rail freight on key lanes where there is high volume presents the first opportunity.

The second opportunity for rail freight, **particularly relevant in large centres such as London**, is to replace part of this last mile leg currently served by Light Goods Vehicles (LGVs) with rail freight which can directly bring freight to and from hubs into city centres for last mile delivery. They can also serve return logistics, such as parcel returns or businesses in the city shipping freight to the rest of the country. There are examples of freight and logistics providers adding micro-consolidation hubs to better serve urban centres. However, this does add an additional step to the process vs traditional road based models which directly serve end-users from hubs.





#### **Overview**

In an effort to serve large cities more efficiently, micro-logistics hubs are emerging within the overall supply chain in order to deliver to local businesses and consumers more efficiently.

#### How do they work?

Micro-logistics hubs make use of small electric vehicles, and generally focus on the use of cycle freight (including cycles, cargo bikes and/or electric cycles and cargo bikes), with some use of pedestrian porters to distribute and collect goods across the capital.

This form of operation can often provide the fastest, cleanest and most efficient option for transporting goods in cities.

Vehicles used are zero emission at point of use, light, quiet and can use a mixture of highways and cycling infrastructure; meaning that they can take short cuts through areas restricted for general traffic to gain a competitive advantage and make more delivery drops per hour in comparison to traditional vehicle movements.



#### **Previous Research**

In 2020, Steer delivered a report on behalf of Cross River Partnership<sup>1</sup>, which outlined the potential for Urban Logistics Hubs in Central London.

The report outlined numerous examples of successful implementation, and evidenced how policymakers can learn from each type of example, as operators can have different business models, have adapted in different ways to their specific geography and have benefited from varying enabling factors, such as public sector support.

Above: DPD's micro-logistics hub in Westminster

The report covered case studies which demonstrate that hubs such can be commercially viable in the right context, but the lack of available land and high costs in central London has so far proven to be a significant barrier. However, micro logistics operations can take advantage of small spaces in existing premises or new developments, which may present the biggest opportunity for urban logistics within central London. The case is clear that logistics hubs can help to encourage cleaner, safer and more efficient freight in central London.

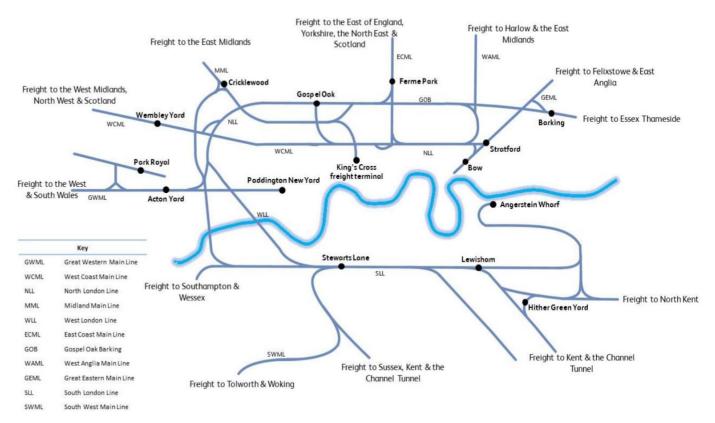
<sup>1</sup> The Potential for Urban Logistics Hubs in Central London, Steer, 2020



Rail freight is present in London in many forms, from supporting the construction industry to moving containerised freight between Ports in the South East and nationwide. Import and export movements of consumer goods, cars and automotive parts traverse railway lines in London. A substantial proportion of the city's waste is removed by rail and Heathrow airport is supplied with a fifth of its aviation fuel by cross-London rail freight.

Typically, traditional rail freight operations which operate into London utilise the orbital rail network which allows freight to move between radial lines. There are a number of pinch-points at key intersections between orbital and radial lines which limit the capacity of rail freight. Accommodating new rail freight solutions over what is mainly passenger rail infrastructure does present potential challenges such as conflicts with passenger services into the city, and capacity allocation at stations.

Where rail freight has yet to establish a presence is in moving light-logistics into large conurbations. With reduced passenger numbers and potential spare capacity on the network, there are potential freight yards and passenger stations which could serve rail freight, creating opportunities to serve new logistics markets.



Source: London Rail Freight Strategy 2020

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Rail freight can provide an efficient, sustainable, safe and reliable solution for moving freight and goods across the UK. Research commissioned by the Rail Delivery Group (RDG) in 2019, suggested that rail freight contributed £2.45bn pa to the UK economy.

Rail freight can benefit customers through time savings, journey time certainty and cost savings enabled by faster maximum speeds.

As shown to the right, rail can offer competitive journey times between London and the many rail connected towns and cities, that use routes that pass through the study area to Waterloo and London Bridge.

Rail offers good reliability and punctuality. As an example, for the period between 8 January and 4 February 2023 (period 11), 94.6% of all trains ran, 97% of which arrived at their destination within 15 minutes of the planned arrival time, comparing well with typical road congestion delays.

Wider societal benefits can equally be gained, with Deloitte calculating £27.9m in social benefits each year, through road congestion relief from modal shift, environmental benefits (e.g. reduced emissions, noise reduction, air quality improvements) and safety improvements.

From	By Rail	By Road	Difference
Rochester	0:46 (to Victoria)	1:03	<b>00:17</b> minutes quicker by rail
Dover	1:06 (to St Pancras)	1:48	<b>00:42</b> minutes quicker by rail
Brighton	1:01 (to London Bridge)	1:53	<b>00:52</b> minutes quicker by rail
Portsmouth	1:33 (to Waterloo)	1:49	<b>00:16</b> minutes quicker by rail
Southampton	1:20 (to Waterloo)	1:51	<b>00:31</b> minutes quicker by rail
Exeter	3:19 (to Waterloo)	3:38	<b>00:19</b> minutes quicker by rail

Source: RAC Road Planner directions to central London; National Rail Enquiries journey planner to central London



2 Market Engagement

# **Our Approach**

2.1

Steer engaged 6 key stakeholders in the Freight and Logistics Industry and 12 stakeholders in the Railway Industry to capture a range of different views from potential service providers and end users on the feasibility of stations in London for freight activities. Discussions were informed by Steer's strategic overview and analysis of current logistics models/

Stakeholder engagement with the **freight and logistics sector** involved open ended discussions aimed to uncover insights on:

- the challenges of their current roadbased logistics models.
- the challenges preventing a shift to rail freight and the mechanisms needed to encourage a switch to rail freight models.
- how rail can complement and integrate with existing road-based logistics models.

- the key markets and logistics flows into London where rail freight provides the most promise and why; and
- the enabling interventions required, particularly at stations, with support from the railway industry and other stakeholders.

Stakeholder engagement with the **railway sector** involved discussions with Network Rail, Passenger and Freight train operating companies to uncover:

- how they can facilitate requirements from the freight and logistics sectors; and
- the challenges they face in commercialising new rail freight solutions.

The rest of this section presents the key opportunities identified by the logistics and rail sectors.



on Urban Health

# "Factors affecting road logistics may make rail freight more viable"

Increasing congestion and shortages of available workforce across the country are an ongoing issue, which is impacting the cost base of existing road operations and reducing reliability.

Inflationary pressures such as rising fuel prices, increasing clean air regulations and charging zones in city centres mean providers are facing higher costs within the supply chain. One stakeholder cited, "with an electric HGV currently being up to 6x the price of a diesel equivalent, and a possible hydrogen truck being over 10x more expensive, using rail and a cheaper fleet of cargo bikes could be an attractive proposition which will also help our movements decarbonise faster".

"Cargo Bikes are becoming a more attractive proposition to serve the city centre as they can deliver more parcels per hour and not be stuck in traffic." They also require less driver training in comparison to learning to drive larger goods vehicles and can be done by a local workforce".

# "Rail could directly replace the last mile leg of existing supply chain into Central London"

Several stakeholders expressed the last mile is an interesting target for rail, as it was reported that approximately 50% of the overall cost of delivering a parcel is incurred within the final mile.

A rail freight solution utilising stations for freight was perceived as being easier to integrate within existing networks, as it does not require a wider redesign of the supply chain.

Some logistics companies also revealed that their delivery stations serving London have been involved in **compulsory land purchases**, which has meant they are being pushed further out of the city as **there is a lack of available land for logistics within London.** This reduces drop density, efficiency and increases delivery costs, and these longer routes from the outskirts into the city are more congested and unreliable.

This suggests rail into central London stations could bring logistics companies closer to urban areas where there is a higher drop density. Integrating rail as a "last-leg alternative" will require the consolidation and pre-sortation of goods outside the city, for area / postcode specific deliveries by last mile road vehicles.

# "Pre-sorting and containerisation are needed to ensure seamless transfer between modes and ensure rail freight is competitive"

Stakeholders cited the issue of rail freight introducing "double handling" within the supply chain to be the primary factor which prevented rail freight concepts from being competitive. Double handling increases costs, time and reduces reliability.

A traditional last mile leg requires a van to travel from their delivery station on the outskirts of London directly to the required area or postcode. Utilising rail into London would require transfer from an existing distribution center or delivery station to a railhead by road. At the other end, providers will need to set-up a new last-mile hub operation to deliver and collect goods between the railway station and catchment area, which could all be very costly.

For rail freight to become fast, reliable and commercially viable, there needs to be a seamless transfer between modes, and dedicated infrastructure developed to reduce double handling and improve efficiency. Stations need to be configured to minimise the time and personnel it takes to off-load freight from a train and onto last mile light goods vehicles, HGVs or cargo bikes.



"Low-volume, high-margin markets requiring fast delivery are suitable for rail freight"

Stakeholders claimed a growing desire from businesses and end-users for same day delivery, with markets such as Fast Fashion requiring providers to seek new ways to ensure fast and reliable delivery, with the market willing to pay a premium for this service.

As congestion on highway links into Central London and within Central London continues to increase, the cost of same day delivery continues to climb. The opportunity for low volumes on existing passenger trains can be delivered in a small time window, and reduce the costs associated with same day delivery for carriers.

Cargo bikes carry fewer parcels but move faster, can park closer to drop locations and have shorter routes across the city. Their smaller capacity (in terms of weight and volume) can lead to more efficient routes overall because deliveries are distributed amongst more vehicles, which could work for a market such as fast fashion. Submarkets such as medical supplies and pharmaceuticals were identified within the engagement as also being suitable for this low-volume, high margin opportunity.

# "The market is starting to appreciate sustainability in business decision making, but there is a long way to go"

Large logistics companies, retailers, and their shareholders have increasing carbon reduction targets. It was noted from multiple parcel carriers that decarbonizing HGV fleets is going to have a long lead time, and battery / hydrogen solutions currently have a high capital cost, making it difficult to roll out zero emission fleets on a national scale.

Stakeholders claimed a growing desire from businesses and end-users for greener delivery options, this may mean customers could be willing to paying a premium for this service, which favours rail freight.

Stakeholders also cited previous resistance to change, however the challenges facing existing road and air-based supply chains are now so significant, that they are becoming **more open to innovation** and investment in new service offerings. This has been recently evidenced, with Nestle recently appointing an internal Rail Development Manager.

Other retailers saw the adoption of new rail freight methods and concepts as having a first mover advantage over competitors and **expressed enthusiasm for further exploration.**  "Trials and collaborations with rail industry can help reduce capital cost barriers, deliver innovation and optimise stations and the rail network for freight"

There was unanimous agreement that rail freight solutions will only be explored by the Freight and Logistics sector if they prove to be commercially viable, but also noted it may take time for rail freight to grow and achieve economies of scale.

If operational costs can be made comparable, but capital cost barriers remain high, the Freight and Logistics market are eager to set up working groups to open communication channels and foster collaboration with local authorities and railway industry players to discuss funding options for trials to reduce capital costs and reduce outlay risks.

Logistics providers have expressed they need to carry out a study to look at their existing logistics network and find appropriate market flows into London which have the volumes and characteristics for rail freight. This includes identifying stations as "nodes" and understanding the last mile catchment from shortlisted stations in consideration within section 3 of this report.



Below is an extract of key feedback from logistics industry stakeholders. These have been divided in to the commercials, solutions design, perceptions and challenges of road, air and rail freight, and opportunities for rail freight. This feedback will inform our initial findings in stage 4 and 5 of the report.

Hiah capital costs such as retrofitting rolling stock and reconfiguring last mile networks make it difficult to develop a business case for investment

# **Commercials**

**Express Rail Freight solutions cannot** carry the volume to achieve economies of scale

2.3

Express Rail Freight does not significantly reduce our cost per unit

Rail freight is vet to be commercially viable within our network

Rail has a role to play within our existing business model

To use existing stations for freight, we would need space for logistics such as HGVs, bikes, storage of goods and sortation, all of which appears limited at current stations. Dedicated infrastructure is needed.

**Double handling** [with rail] increases costs, delivery times and reduces reliability

22 | March 2023

**Solutions** Design

It would be good if we good store product at a central London rail station or terminal site for onwards distribution

> Our existing road model has all the infrastructure configured around it

For rail to work in our network, integration with road based first/last mile with minimal handling must be a priority

Decarbonisation of our linehaul services is a priority, and this is where rail freight could add real value

Double handling quickly increases the cost of a dedicated rail

solution

Rail could directly replace last mile lea of our existing supply chain into London

We would absolutely love to use rail to aet our aoods in to central London for onwards distribution with electric vehicles

# **Opportunities** for Rail Freight

Consolidating volumes could make rail freight more competitive

Consolidation could be one way of aettina more companies to share capacity on a new dedicated fast freight service

A roll cage solution would not work for us, we would prefer to load a full container, to achieve greater efficiencies

The railway needs to better accommodate freight and logistics sector needs

**Recruitment of drivers** 

is one of our biggest

challenaes

Rail can replace unreliable

road links into London

We have looked at putting freight on rail

and tubes before, as a means of aettina

aoods in to the heart of London

Our decentralized logistics network does not lend to a clear opportunity for rail freight

There are several risks with rail freight - particularly during delay and disruption

Health





**Rail Freight** 

Very few markets have enough volume and characteristics to be suitable for rail freight

Changing existing processes to integrate rail freight is costly and disruptive

**Perceptions and Challenges of** 

Rail does not integrate with our existing logistics networks

**Challenges of** road and air

Our key flow of Heathrow to London (usina M25) is now so unreliable by

road, we cannot accurately let our customers know when packages will

arrive

Same day delivery in to London is a challenae by road

We are struggling to procure road equipment such as trailers

> Air freight capacity is becoming increasingly limited

Same day delivery for low volumes on existing passenger trains could be a potential advantage, especially for markets such as fast fashion

# "There is a lack of resource internally for blue sky thinking, and there is a funding gap for innovation to try and develop new concepts"

Stakeholders from the rail freight sector stated that there is often a **lack of internal resource** to develop new rail freight concepts and markets, which have a long lead time, are unproven, and come with a high degree of **financial risk and uncertainty** for Freight Operating Companies (FOCs).

It was highlighted that there is a **funding gap** within industry to try and prove new rail freight concepts and services, and the barriers to innovation are high due to the absence of suitable equipment (rolling stock) which need to be modified, the high capital cost of new rolling stock assets, and the **surplus of available R&D risk capital**, in what is already a low margin sector.

For rail freight operators which have previously looked at serving London stations for freight, it was reported that previous efforts found the **costs of double handling** quickly increase the overall cost of distribution, which makes it difficult for companies to absorb increased handling costs in what is a very competitive market.

### "Changing passenger patterns may unlock more capacity for rail freight..."

Rail freight operations using passenger termini will have to share station infrastructure that is primarily designated for passenger operations.

This may cause operational restrictions for dedicated freight multiple unit services, as they may not be able to get the required station access at the timings which work for the logistics sector.

Stakeholders within the express parcels market emphasised how their sorting activities take place overnight between approximately 19:30-04:30hrs with last-mile deliveries commencing from 06:00-09:30hrs, in order to guarantee delivery and collection during business hours. If rail freight paths into central London stations were only available during the inter-peak or overnight, this **may limit the attractiveness** of the proposition for some sub sectors of the logistics market.

A reduction in passenger services may only go so far. There remains **limited capacity at stations for road-based logistics vehicles**, in order to efficiently deal with the throughput of volume needed to make dedicated rail freight services a commercial success.

# "Rail reform presents an opportunity for rail freight to be embedded into national and local policy"

Discussions found that the current National Rail contracts with the DfT mean there is little to no incentive for Passenger Train Operators to adopt a Parcels as Passengers concept. Reform under GBR could push for the inclusion of a contractual incentive to expand a network of parcels on existing passenger services within the contractual design of new new Passenger Service Contracts (PSC), but the market opportunity needs to be quantified. Based on the heavily delayed PSC timeline and time it will take to award new contracts, it is likely that this would have a significant lead time before it was at scale.

GBRTT have a dedicated freight team, setting future freight growth strategies and targets. GBRTT and Network Rail has recognized the need for increased support and R&D investment for the rail freight sector. Bridging the gap for innovation funding and incorporating freight facilities within station masterplan developments could be one way of ensuring future infrastructure schemes include multi use facilities and support freight at stations.



#### **Summary**

The engagement revealed that there is interest from the logistics sector in investigating and pursuing rail freight at stations, to complement their existing supply chain networks and improve London's (and other major cities) freight networks.

There are significant opportunities for rail freight at stations to play a part within the decarbonisation agenda and in supporting London's freight network to become more efficient and cleaner, but **more needs to be done by the rail sector** to cater to the requirements of the logistics market and develop a feasible rail freight solution with a strong product and market fit.

The key challenges which need to be overcome are:

- the double handling which makes rail freight uncompetitive;
- the lack of space for logistics at major termini stations within London;
- the **deficiency of resource** within existing Rail Freight Operators to innovate;
- the absence of incentives for passenger TOCs to incorporate 'parcels as passengers' within their operations; and

the **barriers to innovation** and **access to risk capital** in developing and trialing new rail freight concepts and solutions for the logistics market.

The development of dedicated rail connected logistics facilities for London (and other cities) could be a way to eradicate the inefficiencies associated with double handling, in which both the logistics and rail freight sector raised as a critical obstacle preventing modal shift.

Such infrastructure could be enhanced further by including rail connected sortation facilities to increase the efficiencies of any transfer from rail to the final mile delivery by road and improve the competitiveness of this model in comparison to road operations.



Above: Intercity Rail Freight using East Midlands Railway to transport medical logistics



# **3** Southwark and Lambeth – Stations Suitability Review

3.1

# Method

A high level assessment of all stations within the London Boroughs of Southwark and Lambeth (the study area) was undertaken to identify a shortlist of five stations that offered the best potential to accommodate rail freight.

This assessment has used publicly available data, including:

- May 2022 working timetable
- 2024 Engineering Access Statement v1
- September 2022 Sectional Appendix Kent, Sussex and Wessex
- ORR station usage statistics
- Network Rail's "Capability review for express freight and urban logistics" report
- Station facility information and maps from the National Rail website
- Online mapping and street-view tools.

There has been no detailed timetabling, operational or capacity analysis work undertaken at this stage, to determine whether freight services can be accommodated at the stations reviewed.

# **Shortlisting**

The table below shows the types of requirements the three main types of rail freight, that would serve the study area, require at stations. These three types are:

- Conveying freight on existing passenger services (individual items, often stored in cupboards or non-public areas)
- Conveying freight on existing passenger services in whole carriages
- A dedicated freight train

There are 28 stations in the study area, 14 of which are in Lambeth and 14 in Southwark. An initial sift of these stations was undertaken based on:

- Number of tracks/platforms available.
- Level of passenger/freight services through the station.
- The operational hours at the station.
- Engineering Access requirements on lines through the station.
- The layout at the station including vertical access.

Conveying freight on ex	sisting passenger services	Dedicated train conveying
Intermediate Station Loading/Unloading	Terminus Loading/Unloading	freight only
<ul> <li>Small storage areas</li> <li>Small number of items carried</li> <li>Appropriate dwell duration needed</li> <li>Station access by passenger routes</li> </ul>	<ul> <li>Whole carriage</li> <li>Larger loads</li> <li>Medium length load/unload times</li> <li>Load/unload within turnround</li> <li>Need step-free access to platform</li> <li>Relies on demand from passenger service's origin</li> </ul>	<ul> <li>Whole train</li> <li>Large loads</li> <li>Long load/unload times</li> <li>Need step-free access to platform</li> <li>Available platform for long turnround times</li> <li>Requires sufficient demand for services</li> <li>Services can operate from any suitable location</li> </ul>





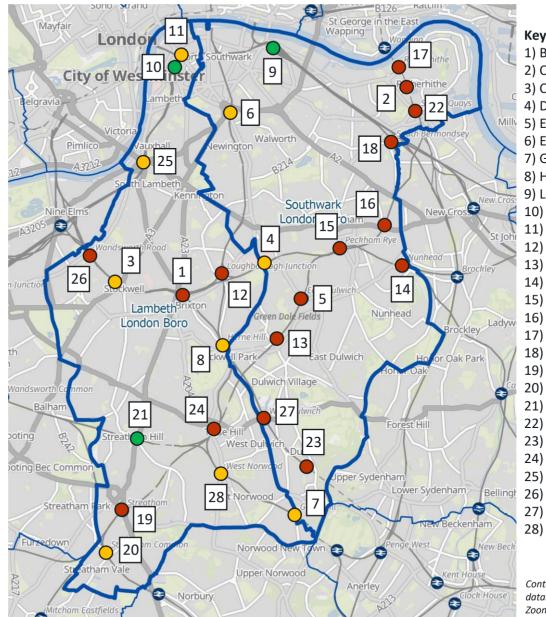
# Shortlist identification

A RAG rating has been given to each station (shown on the map) on the suitability for rail freight operations, based on:

- Initial analysis indicating that the station is unlikely to be suitable .
- Initial analysis indicating that the station might be suitable but there are significant constraints.
- Initial analysis indicating that the station might be suitable with dedicated platforms.

Stations in the study area are mainly served by shorter-distance passenger services, which generally have unsuitably short dwell times (for loading and unloading). The majority of stations also only have two tracks, meaning there is no space for a train to wait for longer to (un)load, without disruption to passenger services. This leads to the large number of stations being designated a Red (unsuitable) rating.

Appendix C provides a summary of the stations reviewed as part of this study.



Kev 1) Brixton 2) Canada Water 3) Clapham High St 4) Denmark Hill 5) East Dulwich 6) Elephant & Castle 7) Gipsy Hill 8) Herne Hill 9) London Bridge 10) London Waterloo 11) London Waterloo East 12) Loughborough Jn 13) North Dulwich 14) Nunhead 15) Peckham Rve 16) Queens Road Peckham 17) Rotherhithe 18) South Bermondsev 19) Streatham 20) Streatham Common 21) Streatham Hill 22) Surrey Quays 23) Sydenham Hill 24) Tulse Hill 25) Vauxhall 26) Wandsworth Rd 27) West Dulwich 28) West Norwood

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Impact on Urban Health



A site visit was held at Waterloo to better understand the capability of the station to handle arriving and departing freight. The site visit focused on the space available underneath the station for freight storage and how to access the platforms from street level.

Waterloo is built on a viaduct of arches and beneath these there is a significant amount of space that could be devoted to storing and consolidating rail freight. Some of this space was previously used by Eurostar's EuroDispatch centre and to store supplies for its trains.

A step free route is available from Platforms 11 and 12 via a ramp to the lower levels. There is then a height restricted route to the street that could be used by small vans and electric vehicles. This is expected to be preferable to transporting freight across the concourse.

Waterloo appears to offer a good opportunity for rail freight. Further study is needed on the work required to enable freight to use the available space and the impact on the surrounding road network from additional logistics vehicles.



The main access is to/from Waterloo Road via the tunnel under the cab road adjacent to Holmes Terrace.



Several areas adjacent to the access road could be converted for storage or consolidation purposes.



Access to the street

A second exit route may be possible via Frazier Street (one way), however the route crosses Lower Marsh Street, which has heavy pedestrian traffic.

Map data from OpenStreetMap





# **Shortlisted Stations**

#### Waterloo

Waterloo currently represents the best opportunity for accommodating rail freight in the study area. A significant feature of the station is dedicated storage area beneath the station, suitable for micro hub / last mile integration (direct step free route to platforms 11 & 12 and cross dock facility at street level). Beyond the core area of Hampshire and the South-West, there is potential rail network access to the West, Midlands and the North subject to timetable path availability.

#### London Bridge

London Bridge offers suitable opportunities for accommodating rail freight. Dedicated terminating platforms would allow trains to unload (and potentially load) overnight, with access to a street level loading area beneath the platforms (this has not been able to be viewed or confirmed through a site visit). Access to the wider rail network beyond Kent and East Sussex is not as direct as Waterloo, but may still be possible.

#### Streatham Hill

Streatham Hill offers a dedicated bay platform (not in passenger use), that could be used by a freight train to load and unload without disrupting other trains. However access to this bay platform is not ideal, as it is also used by empty passenger trains using the adjacent depot.

#### Vauxhall

This station is situated on an eight track section, meaning in theory that passenger trains could use an alternative platform (subject to capacity), providing time for a train to load and unload. Access from the platform is by lift or staircase, with good access to the street.

#### Elephant & Castle

This station is situated on a four track section, meaning in theory that passenger trains could use an alternative platform (subject to capacity), providing time for a train to load and unload. However, access between the platform and street level is only by staircase with no lift option.

# **Recommended further activities**

It is recommended that Waterloo is considered further for the development of recommendation action plans, due to the range of opportunities.

London Bridge offers more limited opportunities in comparison, but would benefit from further technical analysis and site visits beyond the initial study recommendations, to fully assess how freight could be accommodated at this station. This could include (but is not limited to):

- Vertical access at the station (lifts and stairs).
- Vehicle access to the station (if any).
- Location of loading/unloading bays.
- Current servicing routes through the station and how deliveries access the station.
- Whether there are suitable locations for storage or consolidation before onward delivery.
- Staffing arrangements at the station.
- Requirements for passenger/freight segregation and how that might be achievable.



**4 Delivery Concepts** 

4.1

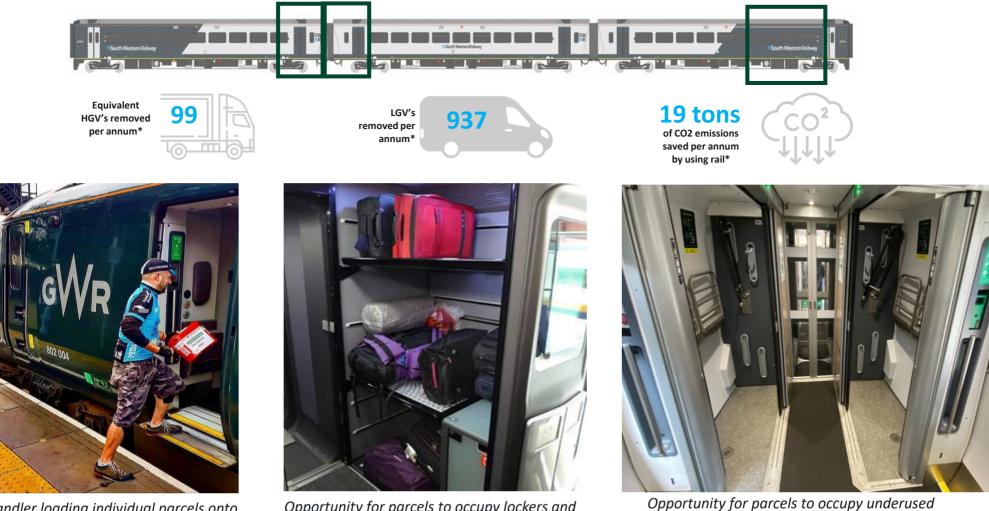
Two delivery concepts have been developed following the earlier stages of this study. These help to formalise the recommendations and action plans for developing rail freight potential in the London Boroughs of Southwark and Lambeth. Both are complementary and can be developed in parallel.

**Concept A** - **Parcels as Passengers:** This concept means conveying individual, small to medium sized packages on existing passenger services. These would normally be conveyed in non-passenger areas of a train (e.g. lockable cupboard), with couriers carrying out the loading and unloading at stations. **Concept B** – **Dedicated Freight Multiple Unit:** This concept means using a dedicated train (most likely converted from a disused passenger train) to carry larger volumes of freight in specially designed cages.

<ul> <li>Low, frequent volumes into London</li> <li>Exeter -Basingstoke – London</li> <li>Waterloo, on existing SWR long distance passenger routes</li> <li>Volumes accepted through strategic consolidation points on</li> <li>Keading – London Waterloo</li> <li>Southampton – London Waterloo</li> </ul>	Dedicated Freight Multiple Unit serving Waterloo         Overview         • Using passenger infrastructure for dedicated freight trains.         • Midlands – London         • North-West - London
<ul> <li>Low, frequent volumes into London</li> <li>Waterloo, on existing SWR long distance passenger routes</li> <li>Volumes accepted through strategic consolidation points on</li> <li>Exeter -Basingstoke – London Waterloo</li> <li>Reading – London Waterloo</li> <li>Southampton – London Waterloo</li> </ul>	Using passenger infrastructure for      Midlands – London
Commodities: Medical, Fast Fashion,         E-commerce         Pros       Cons         • Low risk       • Low volumes only         • Low Capex / Opex required       • Reliant on TOC engagement         • Model is proven on CWB/EMB       • Low logistics carbon reduction (	<ul> <li>Large volumes into Central London terminus stations, on dedicated freight multiple units for onwards distribution</li> <li>Demand aggregated from multiple companies through strategic 'hubs'</li> <li>Class 319 FMU (AC/DC)</li> <li>Class 769 FMU (AC/DC/Diesel)</li> <li>Class 321 FMU (AC Only)</li> <li>Class 321 FMU (AC Only)</li> <li>Commodities: Medical, Parcels, FMCG, Retail</li> <li>Pros         <ul> <li>Low-Medium risk</li> <li>High logistics carbon emissions reduction from removed HGV's</li> <li>Can be tailored to meet needs of logistics industry</li> <li>May not be enough space at stations for logistics</li> <li>High Opex costs</li> <li>High Opex costs</li> <li>Requires WTT pathing for reliability</li> </ul> </li> </ul>



Parcels are loaded onto designated areas on existing Southwestern railway passenger services into Waterloo



Handler loading individual parcels onto a GWR service Source Intercity Rail Freight

Opportunity for parcels to occupy lockers and space for passenger luggage on quieter services Source: Eurostar

Opportunity for parcels to occupy underused bike storage space on services <sub>Source:</sub> Great Western Railway

\* Calculation based on 10x SWR services per day, each with a 400kg payload between Reading and London Waterloo. Road emissions modelled on a 3.5t LGV, using Carbon Care emissions calculator.



steer

#### **Overview**

The Momentum Study described an opportunity for existing passenger Train Operating Companies (TOCs) to diversify their revenue streams with the introduction of light freight into their services. The context in which this opportunity is raised is in response to the changes to passenger rail demand as a result of the Covid-19 impact.

Steer has performed a concept analysis on the opportunity for 'parcels as passengers' and its potential for wider adoption.

#### **Concept Analysis**

The proposed concept is that existing London commuter rail services would be used to transport low volumes of parcels and other time sensitive goods frequently. Whilst this concept is feasible in practice, the following needs to be considered:

- The **modifications needed** for commuter rolling stock to securely accommodate goods.
- The performance implications on commuter services from loading / unloading goods on to the train.
- The origin / destination of the **wider logistics supply chain** and its proximity to the commuter rail network.

#### **Feasibility**

For the purpose of this analysis, the South Western Railway Network has been examined. In theory, it would be possible to include small volumes of goods on to London commuter services through a series of consolidation points for example, Exeter – Basingstoke – London Waterloo, or Reading – London Waterloo for collection at Waterloo and onwards delivery by a London based zero emission courier.

However, any inclusion of logistics on existing commuter trains must meet the following criterium:

- It must be able to prove it does not adversely impact train service performance or reliability.
- It must have designated space on board the train, that can be **secured and locked**.
- It must be supported by digital scanning and a series of 'electronic handshakes' for visibility and traceability.

Whilst it is possible, this does not overcome the challenge that currently there is **no incentive** for Train Operating Companies to engage or source additional revenues which is a significant barrier to the scalability of parcels as passengers as a solution.



Intercity Rail Freight using GWR



#### **Opportunities**

The collapse of the franchising model due to Covid-19 and the reduction in passenger numbers means Train Operating Companies (TOCs) and their Owning Groups **no longer take commercial revenue risk** and now operate under a National Rail Contract (NRC) Agreement with the Department for Transport, which pays a management fee of between 1-3%.

Utilising spare capacity on existing passenger trains could be one opportunity where rail could potentially transport low volumes of parcels fast and frequently between major conurbations using the existing passenger rail network, for onwards final mile delivery.

There are examples to date of TOCs willing to collaborate to carry freight on passenger trains, with intermediaries such as Intercity Rail Freight bringing together retailers / suppliers who require fast and reliable movement of freight between major cities.



Intercity Rail Freight using East Midlands Railway

#### **Intercity Rail Freight**

Steer consulted Intercity Rail Freight (ICRF), which currently distributes time critical medical supplies on existing passenger trains (GWR and EMR). This solution focuses on small, low volumes being transported regularly (e.g. based on an hourly service) over long distance routes for delivery into conurbations. ICRF predominantly has access to TOCs to put logistics on trains by the following means:

- In segregated and secured logistics cage
- In luggage overspill and under-utilised bike storage
- Fully locked out carriages (off peak services only – First and Last trains)

The engagement found that whilst ICRF had proven the concept and that a robust safety / security protocol could be developed for parcels on passenger trains, scaling to other Train Operating Companies routes in pursuit of network development, and securing this capacity on existing services remained limited. ICRF stated how it had tried to negotiate access with other major TOCs to meet demand such as Avanti West Coast and LNER, to no avail.



Parcels as Passengers trial on GWR. Source: ICRF



#### **Challenges**

The key difficulty is incentivising train operators to work collaboratively with Network Rail and logistics providers to utilise spare capacity, especially since recent NRCs have effectively taken away the revenue risk and given TOCs less opportunity for innovation.

There are significant barriers to entry for logistics on passenger trains, mainly due to the lack of commercial incentives for TOCs to engage and the nature of performance-based contracts with the DfT. Additionally, any capital cost needed to retrofit existing rolling stock to enhance logistics space on existing passenger trains, will further increase barriers to entry. TOCs will do their own assessment of the practical issues of accepting logistics at stations, the loading/unloading process, and relative security, safety and performance risk imported to their overall train service, before allowing access.

The performance risks remain high, and the processes of communicating delays with clients and first and last mile handlers and dealing with the commercial implications could potentially deter TOCs from engagement in such initiatives.



#### **Key Considerations**

- 1. How can TOCs be **incentivised** to embrace the opportunity of carrying "parcels as passengers"?
- 2. How can TOCs successfully mitigate the **risks** associated with the concept?
- 3. Do TOCs perceive they have the **capacity** available to accommodate "parcels as passengers" on their existing services?
- 4. What are the **key markets** into London with significant volume which can utilise a "passengers as parcel model"?
- 5. Are existing **passenger service patterns** on the South Western, Southeastern and TSGN networks suitable to carry parcels as passengers?
- 6. What impacts does loading and unloading freight have on the performance of passenger train services, and does it require higher dwell times at stations?
- 7. What **modifications** (if any) are needed to existing **rolling stock and stations** to accommodate logistics on trains?



Parcels are loaded onto roll cages or ULD's and moved on and off a converted passenger train for freight only



Handler loading a roll cage onto a converted passenger train for high-speed logistics

Example of a converted interior of a passenger train with roll cages for freight

#### Source: Orion Trial – Network Rail

#### Source: Orion Trial – Network Rail

\*Rail Emissions are calculated using ORR dataset and assume 0.025 KgCO2e per net freight tonne km, assuming a payload of 90.1 tonnes per train service, based on 432 operational miles per day. Equivalent road emissions are calculated using UK Government GHG Conversion Factors for Company Reporting Dataset (2022) and assume 0.073 KgC02e per tonne-km with a 100% load factor based on the equivalent of 32 single deck trailers operating per day each with a payload of 10,500kg/10.5t. This figure does not include mileage to/from the railhead.





#### **Opportunities**

Existing Rail Freight Operating Companies (FOCs) could be well placed to run **Dedicated Freight Units into stations,** alongside existing TOCs depending on the potential markets that will be served, such as the trunk mileage from distribution hubs to city center spoke sites. FOCs are continuingly in pursuit of new markets and see an opportunity to get ahead of competitors in better serving customers wishing for net zero decarbonization of freight. The sustainability credentials of rail freight mean that rail-based logistics are already becoming a higher consideration for potential customers.



If rail freight options into stations using **electric freight units** are **commercially viable**, FOCs will have the incentive to explore and diversity into this new market and grow market share over competition.

The stand up of GBR and direction of rail reform may provide greater focus on accommodating the rail freight sector and may provide more incentive for FOCs to operate in these new models.

#### **Challenges**

The primary challenge for FOCs diversifying into this market will be commercial. FOCs traditionally operate on low margins, currently understood to be working to a 1-3% margin per service. Therefore, operators are highly cost sensitive in planning and designing their supply chains and operations, and a very small increase in the unit cost of delivering a package make their operations unviable.

For FOCs who carry significant dedicated loads, the size of the prize of delivering rail freight into stations may be too small to consider, and the risks may outweigh the benefits.

There are issues of scalability with running large volumes of goods into stations both from their being limited railway network capacity, limited paths into London and platform space at stations; but also last mile capacity and any need to sort packages they arrive in London may not be achievable at scale.

Passenger services remain the priority on the rail network and freight services will likely continue to find it difficult operating within passenger timetable constraints.

- 1. How can FOCs be incentivized to diversify into new markets?
- 2. Is the size of this potential market too small to attract FOCs when compared to their existing business? How can running rail freight into stations be scaled overtime?
- 3. What are the **key logistics lanes** into London with significant volume which rail could capture vs traditional linehaul processes?
- 4. How can FOCs successfully mitigate the **risks** associated with running rail freight into stations?
- 5. How accommodating will the railway industry and TOCs be to FOCs wishing to run dedicated rail freight services at stations? What are the implications on the passenger offer?
- 6. What **modifications** are needed to existing **rolling stock and stations** to accommodate this model?



#### **Overview**

Momentum's study referenced previous trials to facilitate rail freight at stations, but little information is publicly known as to why these trials did not materialise beyond the initial trial period. Steer has selected the below case studies for further analysis:

- Orion London Euston & Royal Mail Trial -2021
- TNT/Colas Rail Trial 2012

#### **Orion – London Euston Trial**

Steer reviewed the developments of the Orion High Speed Logistics dedicated Freight Multiple Unit Concept. During July 2021, a demonstration was held at London Euston to showcase how their C768/C319 multiple units could offload roll cages on to cargo bikes at major stations. Between November 2021 – January 2022, Orion operated regular weekday Anglo-Scottish services as part of a trial for Royal Mail within its existing railbased network (where services are currently operated by DB Cargo). As of February 2022, the contract for additional capacity had transferred from Orion to DB Cargo, fulfilled by their existing C325 fleet. Upon further analysis and research, the Orion concept may not have proceeded beyond a trial due to:

- Rolling stock reliability: The C768/C319 rolling stock used by Orion had to be regularly locomotive hauled during the Royal Mail trial, which suggests technical reliability issues with the fleet. This is likely, as the original fleet design is in excess of 35 years old.
- Requirement for locomotive haulage: Locomotives increase operational cost and complexity, reducing the performance of a fast logistics service (due to necessary shunting and run rounds required). This in turn reduces the competitive advantage of high speed rail freight as time is lost through shunting, and additional cost is imported in to the overall operation in what is already a low margin sector competing with road based linehaul.
- Limited spares pool: Access to spare parts for maintenance activity in support of high rolling stock reliability for the ageing C319/C769 fleet is limited. Longer wait times for key components is common in older fleets, and this could be a factor impacting rolling stock reliability.

 Train pathing: The reliance on VSTP/STP train paths for new regular freight services should be avoided as it impacts on service reliability. Where possible, rail freight operators should find competitive WTT paths in the network to achieve a minimal run time that is competitive against road based distribution.







#### **TNT/Colas Rail Trial - 2012**

Steer consulted Intermodality, who was heavily involved in orchestrating this trial. Our interview found several emerging issues, which should be considered in any new rail freight at stations trial.

- A train operating from a National Distribution Centre, straight to a city centre rail station for store fulfilment and replenishment was quoted as "ahead of what the existing supply chain could deal with". It 'missed out' the supply of the regional distribution centre, and in turn would have required the re-design of the companies supply chain.
- Whilst the trial was a success in driving efficiencies in resourcing, time, and handling, and in principle, the concept worked, the change to the customers supply chain was deemed too substantial to take forwards.
- Key personnel who sponsored the trial moved on and changed employment, which meant that consistency and internal support for the project was subsequently lost.





Above: TNT/Colas Rail Trial at London Euston (Source: Intermodality / Network Rail)



## **5** Summary of Findings and Recommended Action Plan

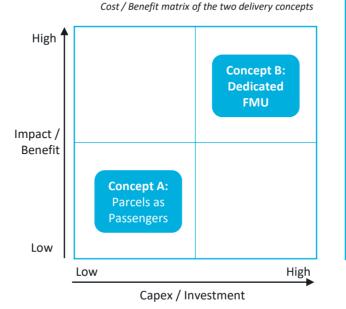
#### **Summary**

There is a clear strategic case for rail freight at stations, taking into account each of the key stakeholders' priorities in achieving a pathway to net zero. Rail presents a credible option for replacing road vehicles for the linehaul / middle mile element of the freight journey.

The review evaluates further evidence beyond Momentum Transport's initial study, and through a review of previous trials has found that whilst in principle, rail freight at stations is feasible, there remains significant barriers to developing this opportunity further.

For the concept of parcels as passengers (Concept A), the primary finding was that there is currently no incentive for Train Operating Companies to engage and incorporate logistics into their existing passenger operations, due to the current NRC model. Until there is policy reform, and a mandate set by the Department for Transport through existing NRCs, then it is unlikely parcels as passengers will be able to reach scale in the short to medium term. These barriers will make it difficult for CRP to meaningfully minimise the harmful emissions from freight within the London Borough of Lambeth, the London Borough of Southwark and wider London authorities.

**Concept B** presents a much larger opportunity to develop a **'freight multiple unit' (FMU)** concept which could be tailored to the market needs of the logistics industry and potentially capture a share of the linehaul / last mile logistics volumes in and out of London, which, could mean a direct reduction in HGV movements (and some LGVs). London is becoming an increasingly difficult city to serve by road in both HGV and LGVs and large logistics companies are exploring alternative modes of transport and distribution.



#### **Key Findings**

- There is currently no incentive for passenger TOC's to accept parcels as passengers, and generate additional revenues, with the majority of TOC's unwilling to engage.
- Parcels as passengers is unlikely to deliver significant environmental benefits over the short to medium term, without DfT intervention which is unlikely.
- A dedicated freight multiple unit concept could be a more attractive proposition for the logistics sector and provide a means of getting 'pre-sorted' volume directly into Southwark and Lambeth, and wider London boroughs.
- CRP should embrace the opportunity to develop a dedicated proof of concept exercise for rail freight at stations, focusing on a freight multiple unit concept using London Waterloo as the main London station hub.



5.1

Implementation of either concept would bring environmental and economic benefits whilst supporting national and local government in achieving transport decarbonisation. Both concepts could be delivered in parallel and therefore do not offer an 'either / or' solution.

The study revealed interest from the logistics market in both concepts, to realise fast, same day delivery into London. For FOCs, there is the perception that any additional handling costs render a dedicated FMU service more expensive than road at more or less any distance.



A dedicated FMU trial train at Birmingham International, operated by Varamis Rail

#### **Key Commercial Challenges**

These include:

- The high capital and operational costs of a pilot or trial and access to risk capital for a dedicated FMU service.
- General barriers to innovation and resources available to innovate in both FOC and TOCs.
- Resistance to changing existing supply chains and the associated costs from rail introducing double handling within the supply chain.

#### **Key Operational Challenges**

These include:

- Sourcing available space at passenger stations for logistics, coupled with platform access and availability at the times required.
- Infrastructure requirements at stations to accommodate EV charging.
- Segregating freight from passenger movements at stations during operational hours and managing conflicts with TOCs' passenger offer.
- Service reliability and potential rolling stock modifications required for freight.
- Perception of performance risk for TOCs.

#### **Stations Suitability**

A high-level review of the 28 stations in Southwark and Lambeth was undertaken to assess their suitability in accommodating rail freight operations.

The analysis revealed that there is limited infrastructure available at stations in Southwark and Lambeth to accommodate either rail freight concepts.

Despite this, 5 locations have been assessed further for their potential in accommodating rail freight operations. These are:

- London Waterloo (shortlisted)
- London Bridge (shortlisted)
- Streatham Hill
- Vauxhall
- Elephant and Castle

London Bridge and London Waterloo were shortlisted to be the most appropriate as they provide terminal platforms, with trains that turnround at the location (providing time for loading and unloading), with cross dock facilities at road level. A site visit indicated that there are opportunities at Waterloo to provide the storage and road access required for rail freight.



#### **Capex vs Impact Trade-offs**

5.1

The market engagement outlined the need for dedicated logistics infrastructure and storage space to support consolidation activities and transfer to last mile LGV's, EVs or cargo bikes, especially where high volumes are envisaged. The FMU concept is expected to require from Day 1:

- Dedicated cross-dock platform infrastructure with sufficient space to accommodate HGV/LGVs.
- EV charging facilities.
- Secure storage for pre-sorted product.

London Waterloo and London Bridge may not have sufficient space for logistics, without investment in infrastructure to improve the efficiency of the handling process and meet the needs of the logistics market.



Intercity Rail Freight delivering tote boxes on East Midlands Railway

A dedicated FMU concept requires the procurement / leasing of suitable rolling stock that is modified to handle light freight.

In contrast, Parcels as passengers has lower barriers to entry as existing rolling stock is already in operation and the requirements to transport smaller volumes frequently could take advantage of surplus luggage and/or space on TOCs' services. It is also expected to require no dedicated logistics infrastructure at stations.

However, due to the smaller volumes transported, the impact in terms of user benefits and wider societal benefits (including the achievement of the objectives for cleaner air) will be much less in comparison to a dedicated FMU.

Both parcels as passengers and dedicated FMU concepts identified have several barriers that would need to be overcome before a trial or regular service could be implemented (outlined to the right).

# Key Barriers to Overcome for dedicated FMU

- **Capex** is needed for dedicated rail to road cross dock infrastructure within London, and the lack of **risk capital for trials** remains a key barrier which needs acting on.
- The FMU concept is being trialed (e.g. by Varamis and GBRf), but the express rail freight market is still immature with the exception of Royal Mail which uses dedicated infrastructure and rolling stock. This situation might change over the next 12-months, depending on the progress of high-speed rail freight initiatives being pursued.

# Key Barriers to Overcome for Parcels as Passengers

 Parcels as passengers requires TOC participation and there is currently no incentive for TOCs to engage with potential service providers or end users on this. Rail reform and the specification of PSC contracts by GBR could be a way to incentivise this. CRP with the support of BIDs and London boroughs could influence TOCs and encourage greater participation.





#### **Key Recommendations (General)**

- CRP should consider identifying and working with a delivery partner to identify potential customers and work with TOCs/FOCs and Network Rail to set up a trial or develop a service.
- CRP should engage and collaborate with other interested parties through the provision of a working group to continue developing proposals for rail freight concepts and sourcing of risk capital for continued R&D.
- London Bridge and London Waterloo were shortlisted as being the most suitable stations for rail freight within the borough. It is recommended that CRP focuses on these stations, but should explore infrastructure outside of Southwark and Lambeth in future.

#### **Parcels as Passengers Concept**

It is recommended that a parcels as passengers trial is orchestrated at London Waterloo, with the trial being used as a test bed for potential enhancements to support adoption of a more scalable longer-term solution.

Parcels as passengers would be cheaper to implement than a dedicated FMU because it uses existing rolling stock provided by the TOC and volumes are smaller, negating the need for infrastructure enhancements.

It should be noted that the existing infrastructure and network constraints at Waterloo mean that it is currently unlikely to be able to efficiently support the handling of large volumes of inbound and outbound freight due to the proximity of road access and space for logistics on site during operational hours.

Despite this, CRP could pursue a smaller scale trial at London Waterloo aimed at express logistics from areas such as Exeter, Southampton, Basingstoke and Reading using South-Western Railway passenger services.

It is recommended that CRP starts small in the short term to develop a minimum viable product, which will require less risk capital.

#### **Dedicated FMU Concept**

Trialing a dedicated FMU concept for a number of months will require a large opex budget. Without investment from FOCs, enhanced Mode Shift Revenue Support (MSRS) or rail innovation grants from the DfT, the short-term barriers are likely going to persist into the medium term.

This report has set out the station requirements to handle dedicated FMUs. CRP should engage Network Rail and enquire about the suitability of London Bridge and London Waterloo for a FMU trial service in future.

Other locations in London that are outside of Lambeth and Southwark might provide more suitable infrastructure and be deserving of further research.

It should be noted that this FMU trial is complementary to the Parcels as Passengers Concept and could be considered in parallel.



The table below summarises the initial capital outlay (CAPEX) and operating requirements (OPEX) to set up a small-scale Parcels as Passenger trial on a small number of services in and out of London Waterloo. It considers small scale parcels as passengers as a minimum viable product, before scaling operations to a full Dedicated Freight Multiple Unit service and the operation of dedicated light logistics trains.

	Small scale Parcels as Passengers	Larger scale Parcels as Passengers	Freight Dedicated Multiple Unit
	A few trains per day carry small parcels in spare space on existing passenger trains. Small volumes of freight which can be loaded/unloaded and carried by individuals in and out of London Waterloo.	Several trains per day carry small and larger parcels in spare space on existing passenger trains, and off-peak passenger services may have a dedicated carriage for freight. Small and larger volumes of freight which can be loaded/unloaded and carried by individuals in and out of London Waterloo.	Dedicated full trains per day carrying small and large parcels on retrofitted trains. Large volumes of freight which can be loaded/unloaded and carried by individuals in and out of London Waterloo
Rolling stock capital requirements	<ul> <li>Very low - use of existing space on passenger trains.</li> </ul>	<ul> <li>Low - use of existing passenger trains, may require some retrofitting to accommodate larger volumes of freight.</li> </ul>	<ul> <li>High – need to procure dedicated rolling stock which is retrofitted for light freight and can operate over 750v DC infrastructure.</li> </ul>
Stations capital requirements	<ul> <li>Very low – no specific requirement for infrastructure to support loading/unloading of small freight carried by individuals between a train and last mile vehicles.</li> </ul>	<ul> <li>Low – no specific requirement for infrastructure enhancements to support a scaled up version of parcels as passengers. Higher volumes may require more labour for handling.</li> </ul>	<ul> <li>High – potential requirement to redesign station to accommodate safe and secure freight movements during passenger hours. Requirement for dedicated space for logistics consolidation activities and road transport.</li> </ul>
Operational costs of running a service	<ul> <li>Low – no additional cost of running an existing passenger train.</li> </ul>	<ul> <li>Low – no additional cost of running an existing passenger train</li> </ul>	<ul> <li>High – dependant on number of trains operated per day and mileage, but this is expected to be high if a service was operated for a number of months.</li> </ul>
Operational costs of handling at stations	<ul> <li>Medium – cost of handlers at originating station and London Waterloo to load/unload small freight on and off the train and onto last mile bikes or light goods vehicles.</li> </ul>	<ul> <li>High – cost of several handlers to aid loading and unloading, may incur other costs such as from operating lifts and needing spare space at stations and full time staff to oversee process</li> </ul>	<ul> <li>High – handling costs associated with moving large numbers of roll cages from trains to goods vehicles will require dedicated labour and this will increase opex costs, especially if minimum dwell times are required.</li> </ul>



#### Specific actions to enable CRP to set up a trial

#### 1. Identify potential markets for this concept

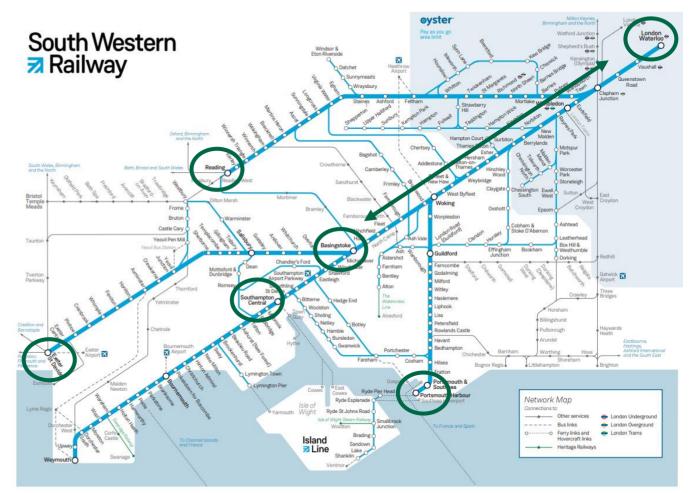
We recommend CRP leads a market engagement exercise to identify potential businesses and end users who require fast, efficient and sustainable delivery of small volumes of freight to/from London and the South/South West of England.

Locations where this concept could add value for local businesses, shippers and couriers include: Southampton, Portsmouth, Basingstoke, Reading and Exeter.

CRP through its existing engagement with BIDs in London and prior experience encouraging businesses to consider alternative freight solutions could help identify freight flows which could benefit from a parcels as passengers concept on the SWR network.

CRP can help consolidate volumes and act as a demand aggregator, or engage with businesses and their logistics partners and suppliers to help identify common flows which could be suitable for rail freight.

CRP could seek to partner with local authorities in the South West to find a B2B market and customers that regularly transport freight in and out of London.



#### South Western Railway Passenger Network (2021)

Source: Project Mapping (http://www.projectmapping.co.uk/Reviews/Resources/SWRNETWORK%20Dec%202021.pdf)



#### Actions for CRP to set up a trial

#### 2. Engage with a rail industry partner

Once CRP has identified potential market interest, it can engage with rail freight industry service providers to develop the solution and navigate the complexities of a multistakeholder environment to bring the concept to trial.

# Actions for Rail Industry Partners to facilitate a trial

The market engagement exercise found that rail freight service providers require sufficient customer interest prior to investing time and resources in facilitating a trial.

A dedicated service provider will act on behalf of CRP and interested businesses to develop and design the solution, and secure buy-in from Train operators (TOCs) and Network Rail to bring a trial to life. They can also support with increasing the potential customer base and arrange first and last mile transportation, for a complete end to end solution logistics solution.

# **3.** Undertake a detailed capacity study of the passenger network and review rolling stock available

A detailed review of South Western Railway's timetable and operations is needed to identify:

- The most suitable existing passenger services that could be used to carry the logistics flows identified;
- The diagrams of these services to understand available dwell time at stations for loading and unloading activities;
- The rolling stock fleet planned for the services and the available space for logistics inside the train.
- The above will inform how to best load / unload freight at stations and whether there would be any additional factors to consider such as rolling stock modifications (if there is no suitable space for logistics), compliance with DfT security requirements, station methods of working, and an understanding of performance risks (with mitigations).

# 4. Confirm identified logistics customer requirements and flows are sufficient for commercial viability

CRP and other prospective end users are to support the rail service provider in determining the commercial feasibility of replacing existing road-based logistics with a rail alternative, to review:

- Ultimate origin and destination of goods to identify first/last mile requirements, such as cargo e-bikes, or LGV/HGV's vans;
- The sizing and weight of logistics (height, width, length) including packaging – (e.g. parcel, mail bag, tote box, roll cage). This is to identify space required on trains and outline how freight will need to be loaded and unloaded;
- Customer / product-specific requirements (e.g. maximum transit time or storage requirements for perishable, hazardous or confidential materials); and
- Current method of transport to compare the commercial viability of the new rail offer vs the status quo method of delivery.



#### 5. TOC engagement to secure buy-in and set up a commercial arrangement

Once CRP and a service delivery partner have lined up suitable custom and confirmed operational and commercial viability. а delivery partners key role will be to lead engagement with Train Operators (TOCs) and Network Rail. To secure buy in and engagement from the TOC. the service provider will present:

- The strategic, political and commercial case for this initiative. as outlined by CRP. and the wider stakeholders and businesses involved in the project.
- Successful case study examples from other ٠ parcels as passengers operations to provide assurances that this project can be delivered.
- The potential **commercial upside for TOCs** • (ancillary revenue) from supporting a trial.
- That the performance and commercial implications and risks towards their contractual obligations with the DfT have been identified, assessed and mitigated for the operations in consideration.

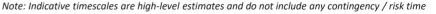
#### **Further Actions to scale the MVP**

Once a concept has secured buy in from Train Operator and Network Rail, CRP continue to support the scalability success of a minimum viable product (M bv:

- Continuing to communicate the will societal benefits and encourage m businesses to continue considering freight solutions and the rail industry increase the resource that Network and TOCs dedicate towards partnerships this area.
- Setting up a working group to h consider how they and the rail industry better meet business freight needs.
- · Continuing to work closely with Netw Rail staff who manage London Waterloo deliver an efficient method of work efficiently load/unload freight at Waterlo
- Ensuring this rail freight solution ties with complementary last mile frei solutions. This could involve setting up growing a micro-consolidation hub in near Waterloo Station, or providing ot facilities desired by freight providers optimise rail freight as a solution.

#### **Procurement Activity Timescales**

па		Gateways	
can and IVP)	CRP to engage with local businesses and authorities in the SW to identify potential customers and partners.	c. 3 months	
ider Iore Irail	CRP to engage a suitable rail service provider.	c. 1 month	-12 mont
/ to Rail s in	Rail service partner to undertake capacity study and identify suitable passenger services.	c. 1 month	in indicative
nelp can vork o to	Rail service partner to develop operational and commercial plan for chosen services.	c. 1 month	9-12 month indicative procurement lead time
to bo. s in	Rail service partner to mobilise a trial with TOC and Network Rail.	c. 1-3 months	lead time
ight and or ther to	CRP and rail service partner to continually review trial performance against success criteria.		







#### **Overview**

Procuring a dedicated FMU service will require planning over several months and potentially need investment in both rolling stock and infrastructure. Lead times are therefore expected to be long.

A FMU concept requires dedicated cross dock platform infrastructure, with space for HGV/LGV vehicles, EV charging facilities, and storage for freight as a minimum.

There remains the question of who would invest in these terminals and promote them, however there may be synergies within NR Property teams/GBRTT looking at how to develop strategic city centre sites for freight.

Significant engagement will be required with NR (on pathing and route clearance); ROSCOs (on rolling stock); FOCs (to procure the operation); and customers (to inform the service design phase).

Timeframes could be 1 year or longer, especially if LTP timetable paths are requested. STP timetable paths give a shorter lead time (and may be sufficient for the proof of concept), but are inefficient for a longerterm service.

#### **Actions Required**

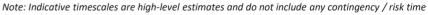
CRP could consider the following actions to enable an FMU concept through engagement across the wider rail industry:

- Setting up a working group led by CRP/GBRTT/NR with operators, local boroughs, customers and advisors.
- Identifying infrastructure interventions that could support FMU operations, led by NR's Freight and Estate teams/GBRTT.
- Work with GBRTT to identify policy interventions to support the development of rail light logistics flows and discuss with DfT the allocation of more funds as part of this support.
- Review the findings of trials currently being undertaken and engage with those taking part (e.g. Varamis) to identify what CRP could do to help encourage rail freight in other London boroughs.

If a suitable proof of concept trial is identified, the following activities (some undertaken concurrently) have been outlined as being key procurement stages. This has been outlined by GBRf (FOC), and indicative timescales provided.

#### **Procurement Activity Timescales**

Engage a FOC as delivery	Gateways
partner	
Identify area for customer demand	c. 1 month
Identify suitable stations	c. 1 month
Identify suitable rolling stock	c. 1 day
Discuss station integration with Network Rail	c. 2 months
Undertake route clearance and how to fill gaps	c. 4 months
Assess traincrew route knowledge	c. 1 week
Review bespoke loading solution requirements	c. 2 weeks
Clarify aims and objectives of the trial	c. 1-2 days
Align traincrew resources	c. 2 weeks
Prepare and bid a path to Network Rail	c. 1 week
Mobilise a Trial	c. 4 weeks



Supported by



12-14 month indicative procurement lead time<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> A trial using STP timetable paths could, in theory, be delivered much quicker

<sup>(</sup>within 3-4 months) but LTP paths are advisable for a robust proof of concept trial.

5.6

#### **Transport and Planning Policy**

Policies from Government and other relevant authorities can have a large impact on the rail industry. In the case of rail freight to London stations, policies that might help develop and maintain the market would include those that:

- Incentivise operators and businesses to develop the concept and use it.
- Disincentivise other transport modes, where linked to wider environmental disbenefits.
- Ensure that infrastructure required to support the concepts is available.

CRP should work with Local Authorities to identify and develop policies that:

- Support and incentivise local businesses to pursue micro-consolidation solutions and work with businesses to aggregate volumes, which would make a multi-modal rail and sustainable last-mile service more viable.
- Support local logistics by continuing to research, fund and deliver local micromobility trials, such as delivering a sharedspace for freight and logistics providers at places like Waterloo station, to store freight and charge e-bikes.

- Expand Ultra Low Emission Zones and provide other policy measures to disincentivise road freight on environmental grounds.
- Ensure local planning policy is flexible and accommodating to innovation, such as ensuring future master-planning around Waterloo safeguards space which can be reserved for micro-freight hubs.

CRP could request that DfT and other Government departments consider further policies that:

- Provide grants to operators of light logistics to cover operating costs (e.g. Enhanced Mode Shift Revenue Support), with increases to support light logistics by rail.
- **Fund new infrastructure** required for rail logistics into cities (e.g. reinstating the Freight Facilities Grant).
- Fund trials to ignite innovation and reduce barriers to entry for the market.
- Adopt road and air freight carbon taxation and commit to introducing road user charging.

#### **Rail Policy**

Rail reform and the mobilisation of GBRTT provides opportunities for CRP to influence change for inclusion within the future GBR, such as:

- Inclusion of rail freight and urban logistics in all design consultations going forward.
- Inclusion of incentives for logistics on passenger trains within the new Passenger Service Contracts (PSC) currently being designed.
- Consideration of appropriate financial incentives that could be pursued.
- Space at stations and network paths for rail freight to be safeguarded.

#### **Dedicated Working Group**

It is recommended that following this report, a **dedicated working group** for London should be set up, to facilitate discussions between funders, logistics companies, infrastructure providers, operators and advisors. This can provide continued momentum and support development within this space, ensuring a constructive forum where concepts and issues can be debated and issues resolved.



#### **Parcels as Passengers Concept**

The parcels as passengers concept is the recommended option of the two assessed. It will require CRP to work with a third party to develop the proposition, identify routes and customers and work with TOCs to deliver the concept. Possible routes could include Southampton and Exeter to London Waterloo.

Cost requirements are expected to be far lower in comparison to the FMU concept, assuming no new infrastructure is required at the terminal to handle inbound and outbound freight for the duration of the trial. As a result, lead times may also be shorter. However, this trial will require considerable stakeholder engagement by CRP to secure buy in from the passenger TOCs, which will take time.

Benefits from carrying parcels with this concept may start small, but **include an opportunity to reach scalability.** Utilising surplus capacity on passenger services could remove long-distance LGV and HGV movements between London and the South West, equating to hundreds of tonnes of CO2e saved per annum. If scaled to multiple long distance services per day, this could represent a significant carbon saving.

#### **Freight Multiple Unit Concept**

A FMU concept trial will require the identification of customers and a FOC to operate the service. Options could include partnerships with express logistics companies to move aggregated volumes from the Midlands triangle to London, or working with retailers to distribute pre-sorted product for London stores.

Given the constraints of stations in Southwark and Lambeth, and higher operational complexity of serving rail flows between the Midlands that need to cross London, stations and sidings north of the River may be more suitable for a FMU trial.

Leasing converted Rolling Stock and minimising station infrastructure enhancements should keep capital outlay low and ensure a trial is developed in 3-4 months. The First of a Kind (FOAK) Rail Freight 2022 competition funded by DfT and Innovate UK included a FMU concept trial which was awarded £396k to cover the operating costs of a 3-4 month trial<sup>1</sup>.

Just one service could remove over 10 longdistance HGV movements per journey and equate to over 1000 tonnes CO<sup>2</sup>e saved per annum from inception, prior to any scaling.

#### **Future Enabling Works at Waterloo**

Whilst London Waterloo has been selected as the more practical location to undertake a parcels as passengers trial, both London Bridge and London Waterloo currently have issues that would need to be overcome. It would therefore be beneficial to:

- Identify suitable space for on-site storage and loading, e.g. cargo bike hubs, EV charging, and include this within the station masterplan.
- Consider land near to stations as it becomes available, for sorting/collection hubs.
- Provide additional or improved facilities to move goods between the platform and ground levels.
- Identify means of segregating passengers and freight movements safely.
- Safeguard platform space and paths for future freight activities serviced by rail.

Any trial at the station could help inform the changes necessary at that and other stations to accommodate more rail freight.

#### <sup>1</sup> First of a Kind Rail Freight 2022 competition results (DfT &Innovate UK, 2022)



## **Appendix A: Endnotes / References**



Appendix A provides the documents, references and URLs for the endnotes identified throughout this report.

#### **1 Desktop Review**

- 1. Guy's & St Thomas' Foundation gsttfoundation.org.uk
- 2. Rail Freight in London Feasibility Study (CRP/Momentum, 2022) <u>https://crossriverpartnership.org/wp-</u> <u>content/uploads/2022/07/CRP-Rail-Freight-</u> <u>Report.pdf</u>
- 3. TOCs are currently operating on management contracts, which arose during the Covid-19 pandemic. The TOC is paid a minimal management fee (1-3% margin) by the DfT and this is based on train service performance. TOCs currently do not take any revenue risk, so there is little incentive to support the development of new revenue streams.
- Final UK Greenhouse Gas Emissions National Statistics 1990 – 2019, BEIS, 2021 <u>https://www.gov.uk/government/statistics/tran</u> <u>sport-and-environment-statistics-autumn-</u> <u>2021/transport-and-environment-statisticsautumn-2021</u>
- Domestic freight transport by mode, DfT, 2019 <u>https://www.gov.uk/government/statisticaldata-sets/tsgb04-freight</u>
- Decarbonising transport for a better, greener Britain, DfT <u>https://assets.publishing.service.gov.uk/govern</u> <u>ment/uploads/system/uploads/attachment\_dat</u> <u>a/file/1009448/decarbonising-transport-abetter-greener-britain.pdf</u>

- Clean Air Strategy, DfT, 2019 <u>https://www.gov.uk/government/publications/c</u> <u>lean-air-strategy-2019</u>
- Decarbonising Transport One Year On Review, DfT, 2022 <u>https://assets.publishing.service.gov.uk/govern</u> <u>ment/uploads/system/uploads/attachment\_dat</u> <u>a/file/1090420/Decarbonising-transport-oneyear-on-review.pdf</u>





## **Appendix B: Strategic Case**



Appendix B identifies the key considerations by stakeholder to deliver an effective rail freight solution at stations. These considerations, posed as questions, informed factors to consider in the market engagement and station suitability reviews.

**B.1** 

There is a strong national policy aspiration to **reduce carbon emissions and achieve net zero by 2050**. Transport produces 27% of all emissions<sup>4</sup> (BEIS, 2019), of which HGVs and LGVs account for 35% of all transport emissions<sup>5</sup> (DfT, 2019).

Decarbonising Transport<sup>6</sup> (DfT 2021). recognises the need to decarbonise freight movements, appreciating that even the most optimistic forecasts acknowledge the technology evolution and roll out that will be required to decarbonise HGVs, compared to smaller cars and vans, will take many years. 2040 is the target for the phase out of the sale of non-zero emissions HGVs over 26 tonnes. Multi-modal options which utilise rail freight present an opportunity to reduce emissions in the shorter term, and improve local air quality, meeting objectives set out in the Clear Air Strategy<sup>7</sup> (DEFRA, 2019).

Furthermore, government realise the potential of rail freight in helping reducing congestion and improving the resilience of national and local highway network, which in turn increase the efficiency and reliability of freight movements and support macro-economic growth objectives.

#### **Challenges**

The key challenge for National Government lies in how they **incentivise other stakeholders to trial rail freight solutions**. As will be discussed from their perspectives in this report, there are a number of strategic and commercial barriers which are stopping freights and logistics providers from considering rail freight and stopping the railway industry from accommodating freight more proactively.

Road user charging and clear air zones are two policy levers present in London which have caused freight and logistics providers to consider changing their operating models.

Government have shown willingness to invest in research and development, recently completing the first year of the Zero Emission Road Freight Trial programme<sup>8</sup>, which included six feasibility studies and the deployment of twenty battery electric rigid trucks into NHS and local authority fleets. They have committed to investing over £200m to expand upon this work, which will demonstrate three zero emission HGV technologies at-scale on UK roads. There is **opportunity for funding trials to overcome the capital costs in setting up new rail freight processes**, working with the freight and logistics sector.

- 1. What policy levers are available to National Government to **incentivise stakeholders** and encourage freight and logistics businesses to utilise rail freight and multi-modal solutions?
- To what extent can national government fund trials to ignite innovation and reduce barriers to entry for the market?
- 3. To what extent can rail freight solutions support mode shift away from HGVs/LGVs? How can the benefits of reduced congestion and improved resilience of the strategic road network be communicated and quantified to industry stakeholders?



The local government context for this study is specific to London, so the outcome may be different. if the geographical scope was extended beyond London.

The Mayor's Transport Strategy<sup>1</sup> (2018) sets out the goal of reducing HGVs and LGVs entering central London in the morning peak by 10% by 2026. The strategy, and subsequent Freight and Servicing Action Plan<sup>2</sup> (2019) and London Rail Freight Strategy<sup>3</sup> (2021) commit to reviewing London's strategic freight network and identify the opportunity for greater use of rail freight, bringing freight closer to its final destination by rail. There is a focus on improving the capacity and resilience of orbital rail which is utilised by cross-London rail freight, unlocking the opportunity to run freight services from the Midlands to South London.

Space is a premium in Central London, and freight consolidation centres are being pushed further out of the city, increasing the traditional last mile leg made by road-based vehicles. Between 2010 and 2019, the miles travelled by LGVs in London increased by 68%<sup>7</sup>. The number of parcels delivered in London is expected to double by 2030 as the shift to e-commerce continues. Research conducted by TfL found that a 1% reduction in

industrial land available in London has increased distances driven by goods vehicles by 0.5%<sup>8</sup>. TfL recognises the opportunity to reduce road congestion on key arterial corridors, with the **cost of congestion in London estimated at £2bn in 2017**<sup>4</sup>. 15% of total vehicle miles travelled in London was from road freight, causing 25% of carbon emissions, 34% of nitrogen oxide (NOX) and 27% of fine particulate matter (PM2.5) emissions<sup>6</sup>.

Reducing congestion will improve road safety, raise the attractiveness of active travel, and significantly improve air quality. These all present an opportunity to replace this leg with rail freight and last-mile LGV movements.

#### **Challenges**

Local Authorities in London need the ability to influence policies which deter traditional road freight and **incentivise ideas such as microconsolidation of commercial deliveries to facilitate efficiencies for last-mile logistics**. They play a key role in facilitating collaboration with businesses. London is a unique example with such a high density of people. Solutions that work within the capital may not be scalable to other, smaller cities and local authorities.

- 1. How is the strategic and non-strategic road network in London going to cope with growing demand for freight? Is this "market failure" alone going to be a push factor to encourage freight and logistics providers to consider new and alternative delivery models? How can TfL and local authorities further incentivise this shift?
- 2. With the recent trend of logistics hubs shifting further out of London, at what point is there a tipping point where traditional last mile legs by LGVs become too long and rail freight can provide a competitive alternative?
- 3. What is needed to better integrate railway stations and develop suitable **local last mile networks**? What infrastructure needs to be provided?
- 4. To what extent will local authorities have control over **initiatives** such as expanding ultra-low emissions zones, implementing dynamic kerb or microconsolidation solutions to deter traditional road freight and make multi-modal options more attractive?





Recent rail reform and the stand-up of Great British Railways also present opportunities. There is higher focus on decarbonisation and freight, with work underway to **develop a rail freight growth target**, currently consulting across the industry to increase growth and investment within the sector.

The long-standing impacts of lower passenger numbers from COVID could provide the spare capacity, both on existing passenger services for parcels and light freight and more train paths for dedicated freight services into central London. The Office of Rail & Road (ORR) reported 332 million rail passenger journeys in Great Britain in the guarter between 1st April to 30<sup>th</sup> June 2022, which is only 75% of demand over the same period in 2019. Commercially, freight provides an opportunity to replace lost passenger revenue and diversify income streams, such as from increasing track access charge revenues.

There is an opportunity to repurpose disused station space previously used for retail or ticket offices, and Network Rail (NR) assets near stations. This again could provide rental income for NR from letting out space to logistics providers.

#### **Challenges**

Delivering rail freight solutions at stations will have conflicts with the passenger offer at stations. Safe operation of large freight movements will likely need to involve full segregation away from passengers, involving redesign of some stations and new infrastructure such as lifts to get from train platforms to loading vehicles for last mile delivery. Short-term storage may also be required and be space-intensive. The **industry will need to consider the opportunity cost of utilising platforms and station space for freight**.

Conflicts continue on the railway network, running dedicated freight units into the busy stations in South London where there are still limited paths available present challenges, and any innovation will need to complement existing passenger services without disruption.

The risks and conflicts identified above, and the complex ownership and governance structures, permissions, and legal agreements of the industry and significant red tape and cost to a freight provider or local authority wishing to utilise rail freight will need to navigate. This presents a significant barrier to entry for potential logistics providers.

- 1. Does the railway **network have the capacity and capability** available to accommodate desired freight solutions?
- 2. Do potential stations have the spare platform capacity for freight trains to stop and unload goods without compromising passenger services?
- 3. Does an option negatively impact on the ability to run passenger services?
- 4. Can potential stations be **adapted** to support the **infrastructure** needed to ensure **safe** and segregated movement of freight from trains to a loading area for last mile?
- 5. How high is the **capital cost to NR and the freight provider** in setting up this enabling infrastructure?
- 6. What are the **staffing** implications at stations? What **oversight** does NR need in delivering freight at stations, what are the other **operational risks** and mitigations which need to be in place?



Freight and logistics providers need to innovate to expand their capacity, lower unit costs and diversify their offer in light of continued growth in freight. In particular, express freight demand in London and the comparative cost of traditional movements due to expanding ultra low emission zones, rising fuel prices, congestion and a continued shortage of HGV drivers.

Alternative delivery methods which utilise rail freight to replace 'middle' and last 'mile', are being considered. Whilst they see more traditional high-capacity rail freight as being potentially supporting for the first and middle 'mile', the opportunity for rail freight to support the last 'mile' has been less explored but is of interest. There are several key players in the interurban logistics market each looking for a competitive advantage over their competitors, they have hubs to serve urban centres which are increasingly being pushed out of London. The logistics models of providers who operate a decentralized supply chain mean they have little appetite for traditional rail freight replacing linehaul journeys. However. there mav be opportunities for rail freight becoming an option to support last mile deliveries.

#### **Challenges**

There is a significant challenge in overcoming the comparative advantage of road freight over rail.

Adding a rail leg adds a manual transfer and additional handling compared to the existing road-based model. This adds cost, time and complexity to the supply chain. For rail freight to be competitive, simplifying the first-mile through **investment in rail connected distribution centers would help overcome some of these obstacles**.

Similarly, rail providers will need to ensure competitive last mile options complement their rail freight solution to keep the overall cost of distribution low. High value commodities, e-commerce and perishables require fast delivery without impacting on margins.

High initial capital investment in new rolling stock and terminals means that it can also be cost prohibitive to set up new processes and change from existing road-based models.

Logistics providers have less control and oversight over delays and when things go wrong in their network when using 3<sup>rd</sup> party suppliers such as railway undertakings, which can add risk into their overall logistics operation.

- What volumes are needed for rail freight solutions to provide competitive unit cost vs existing highway-based logistics chains?
- 2. Can providers **integrate their existing logistics network** and distribution centres to the rail network?
- To what extent can sorting activities be completed prior to minimise activity at stations and ensure seamless transfer between modes?
- 4. What are the **last mile solutions** required to utilise rail freight? Do providers have the expertise and oversight to own, operate and optimise last mile activity?
- 5. Is utilising rail freight and a new lastmile model more commercially and environmentally efficient than their current last mile solution (which likely involves vans travelling into the city from outer London centres)?
- 6. What are the potential risks and challenges of operating at stations and relying on the railways to reliably provide a leg of their logistics model?





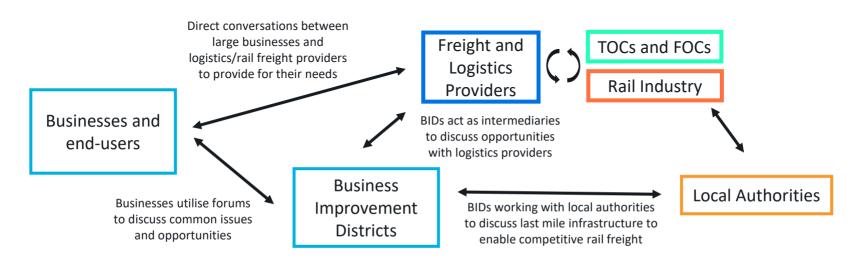
Requirements from end users for fast and reliable same or next day delivery is a growing market in London.

There are examples to date, as examined in the prior Momentum Study and in Section 1.5 of this report, which demonstrate a wide array of businesses which could utilise rail freight at stations models, with precedence set by the railway industry working with local businesses carrying items such as medical supplies, fast fashion parcels and fresh food and fish all over Great Britain into London rail termini.

Previous engagement by Momentum with Business Improvement Districts (BIDs) in London indicated a strong desire from local businesses to work together to improve local air quality and realise the potential efficiency benefits of new rail and multi-modal delivery solutions. If a fast, reliable and cost-effective rail freight solution is implemented, it can attract new businesses to the area and make thrive. existing businesses Existing engagement between local authorities and BIDs will help facilitate the roll-out of microconsolidation centres and other last-mile initiatives needed to make a rail and multimodal solution more attractive and reduce the end-cost for businesses.

#### **Key Considerations**

 How can interested businesses and end-users engage amongst themselves, local authorities, freight and logistics providers and the railway industry to deliver desired solutions? What are the communication channels required?





# **Appendix C: Stations Review**



Appendix C provides a summary of the stations reviewed as part of this study.

#### **Station Overview**

**C.1** 

London Waterloo is a busy London terminal station located within the London Borough of Lambeth. It handed 87million entries/exits in 2019/20, which made it the busiest station in Great Britain. The usage figures dropped substantially due to COVID-19, with only 12million entries/exits in 2020/21.

Passenger train services to and from the station comprise a mix of South Western Railway inner and outer suburban services to locations in Greater London, Berkshire, Hampshire and Surrey and longer distance services to Portsmouth, Southampton, Weymouth and Exeter. Passenger services in the May 2022 timetable operate between 05:08 and 00:32.

Waterloo has 24 platforms, with lengths ranging from 208m to 268m. All can handle a minimum of 10-car trains of 20m vehicles. The May 2022 timetable indicates that potentially 9 or more platforms are used for overnight stabling, but others may be available for several hours overnight for freight services. More detailed analysis would require a review of rolling stock diagrams.

#### **Station Overview (continued)**

The table below shows the maximum peak passenger paths operating to and from Waterloo and the number of paths in the inter-peak timetable. These are based on the May 2022 timetable, where some services have not been reinstated since COVID-19. The table indicates that given 24 platforms, there may be some capacity particularly in the inter-peak for a platform to be dedicated to freight loading and unloading if re-platforming takes place.

	AM Peak	Inter Peak	PM Peak
Inbound <sup>(1)</sup>	47 tph	33 tph	41 tph
Outbound <sup>(2)</sup>	40 tph	33 tph	45 tph

tph = Trains Per Hour

#### **Network Access**

The station is located at the start of the South Western Main Line. The 24 platforms at the station are accessed from 8 tracks (reducing to 7 beyond Vauxhall). These are electrified using 750V DC third rail. The station has good access to the network south-west of London, but also to the West London Line, providing opportunities for dedicated freight services from the Midlands and North if paths can be found. The Reading line also provides access to routes to the North, West and Midlands.

#### **Network Access (continued)**

Operating a 'parcels as passengers' service to Waterloo would require a TOC to provide capacity on some of its trains. The longer distance terminals at Portsmouth, Southampton, Weymouth and Exeter may be most suitable for this, however locations with good onward transport links, for example Basingstoke or Reading, might also be suitable.

The 2024 Engineering Access Statement v1 allows standard overnight line possession opportunities in three blocks at Waterloo. These allow platforms 1 to 10; 7 to 15; or 12 to 24 to be blocked, as long as other platforms and the lines to them are available. SWR will be able to stable trains in some of the blocked platforms, therefore there may continue to be capacity available for freight trains to unload and load at platforms. The standard possession opportunities ensure that lines to Waterloo from at least Clapham Junction are available when others are blocked.

<sup>(1)</sup> AM: 07:56 - 08:55½, Inter Peak: 11:00 - 14:59½, PM 17:23 - 18:22½
 <sup>(2)</sup> AM: 07:09 - 08:08½, Inter Peak: 11:00 - 14:59½, PM 17:24 - 18:23½



#### **Station Access**

**C.1** 

Waterloo is located on a viaduct, accessible from street level by the Cab Road which runs around the station's eastern and northern perimeter, with access also potentially available to the lower levels of the former international terminal.

Level access is provided to the Cab Road from the centre of the station, opposite Platform 12, however using this route for freight access during passenger operation hours would conflict with passenger flows.

The lower levels at the former international terminal (Platforms 20 to 24) could provide a solution to handling arriving and departing freight, with lifts provided at platform level and the potential to make use of adjacent road access.

Network Rail has highlighted other opportunities for supporting freight delivery in its September 2021 "Capability review for express freight and urban report. logistics" This includes an expansion of the Mezzanine level across the concourse and platforms and making use of the station undercroft (see next page).

#### **Station Layout**

The internal layout of Waterloo station is shown on the plan (right).

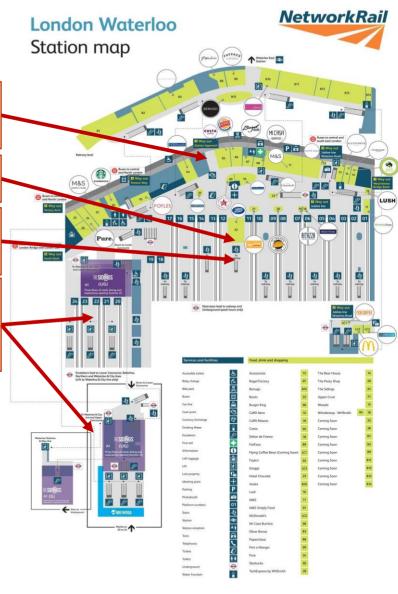
Level access to the Cab Road from the concourse is possible through an arch in the station perimeter wall.

The central platforms are probably best suited to access the Cab Road.

Access to the station undercroft is via a ramp from Platforms 11 and 12, offering a direct, step free route to street level.

The former international platforms may provide a suitable alternative, if space can be made to handle freight in the lower levels, which are accessible by lifts.







#### **Station Overview**

London Bridge was the third busiest station in GB in 2020/21, slightly ahead of London Waterloo at 14million entries/exits. Prior to COVID-19 in 2019/20 the figure stood at 63million entries/exits. It is located in the London Borough of Southwark and comprises a combined terminal and through station.

At the terminal platforms (Platforms 10 to 15) Southern Railway passenger services operate to a range of inner and outer suburban locations as well as some longer distance locations, including Uckfield and Caterham. These six platforms are between 239m and 257m in length and can handle between 10- and 12- car trains. Overnight stabling may take place in some of these platforms.

The through platforms (Platforms 1 to 3 and 6 to 9) are used by Southeastern services from Cannon Street and Charing Cross, comprising suburban and long distance services to Kent and Sussex. Thameslink services operate from Platforms 4 and 5 from locations including Bedford and Cambridge in the north to Kent, Sussex and the South Coast.

#### **Station Overview (continued)**

London Bridge's terminal platforms are used by a maximum of 12 trains per hour in the peak and average of 11 trains per hour in the inter-peak, based on the May 2022 timetable. There may be some COVID-19 related reductions in service in this timetable.

	AM Peak	Inter Peak	PM Peak
Inbound <sup>(1)</sup>	12 tph	11 tph	12 tph
Outbound <sup>(2)</sup>	11tph	11 tph	12 tph

At 11 trains per hour using six platforms there may be opportunities to re-platform services to free a platform for freight loading and unloading.

The through platforms are busier in terms of throughput, but over a greater number of platforms. The table below shows that 32 trains per hour operate on average through the nine platforms in the interpeak, with a maximum peak figure of 53 trains per hour.

	AM Peak	Inter Peak	PM Peak
Inbound <sup>(3)</sup>	53 tph	32 tph	44 tph
Outbound <sup>(4)</sup>	45 tph	32 tph	49 tph

tph = Trains Per Hour

#### **Station Overview (continued)**

Given the intensity of service in the peak, it is unlikely that the through platforms would be suitable for freight services. In the inter-peak it may be possible to release a platform (for example if Cannon Street services could use two platforms instead of one). Further analysis of the practicality of this is needed.

#### **Network Access**

The station is located at the start of the Brighton and South Eastern Main Lines. 11 tracks approach the station, all of which are electrified at 750V DC third rail. Access to the railway network to the south and south-east of London is good, and via the South London Line and West London Line access to the Midlands and North is possible.

As with Waterloo, a TOC partner would be needed to operate a 'parcels as passengers' concept, which would rely on turnrounds at the terminal platforms being long enough to load and unload.

<sup>(1)</sup> AM: 07:28 - 08:27½, Inter Peak: 11:00 - 14:59½, PM 17:54 - 18:53½
 <sup>(2)</sup> AM & IP: averages 07:00 - 09:59½, 11:00 - 14:59½, PM 18:12 - 19:11½
 <sup>(3)</sup> AM: 07:35 - 08:34½, Inter Peak: 11:00 - 14:59½, PM 17:00 - 17:59½
 <sup>(4)</sup> AM: 07:45½ - 08:45, Inter Peak: 11:00 - 14:59½, PM 17:13 - 18:12½



#### **Network Access**

**C.2** 

The 2024 Engineering Access Statement v1 allows standard overnight line possession opportunities by four different groups of lines, those from Cannon Street; Blackfriars; Charing Cross; and the terminal platforms. Charing Cross and Cannon Street have early start/late finish line blockages on some nights due to NR patrolling. It may be possible to request amendments to the EAS to allow at least one route to the station to remain open for freight when others are blocked, if this is not already an unwritten requirement.

#### **Station Access**

London Bridge is located on a viaduct, accessible from a lower concourse beneath the tracks and a platform level concourse leading to a cab road. A service lift may be available from the terminal platforms to a service yard or other non-passenger areas beneath the station.

If freight services could make use of the terminal platforms at night, it may be preferable to make use of the concourse and cab road for onward distribution.

#### **Station Layout**

The internal layout of London Bridge station is shown on the plan (right).

Escalators and lifts are provided from the through platforms to a lower concourse underneath the station.

Platforms 11 and 12 (terminal) have a staff only lift which appears to enter the buildings between the paid and unpaid areas of the lower concourse. Further information on this and how it operates should be sought.

The terminal platforms have direct access to the cab road via the concourse.

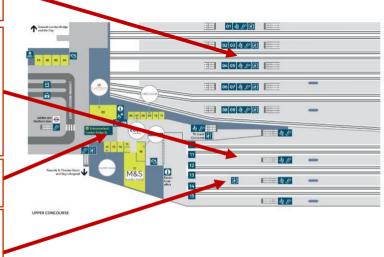
A passenger lift is provided from Platforms 13 and 14 (terminal) to the paid area of the lower concourse and could provide access to the street.





Upper concourse map









### **Streatham Hill**

#### **Station Overview**

Streatham Hill station is located in the London Borough of Lambeth. It is situated between Balham and West Norwood on the route from London Victoria to Crystal Palace.

The station comprises two platforms of between 183m and 205m length (9- to 10cars). A third, bay platform is provided at the station, which is not used by passenger services, but may be used as part of shunting movements into and out of Streatham Hill depot. This may provide opportunities for freight loading and unloading, although it is believed that the bay platform is shorter than the main platforms which would limit the length of trains using it.

Streatham Hill has four trains per hour which are relatively well spaced. All services are suburban, with 2tph between London Victoria and London Bridge and a further 2tph between London Victoria and West Croydon. The suburban nature of the services, combined with the lack of terminating trains means that dedicated freight using the bay platform may be the preferred option at this station, if practical.

#### **Network Access**

The station is located on the two-track 750V DC third rail section of railway from Balham Junction, beyond which there is four-track access to Clapham Junction, the West London Line and London Victoria. The two-track section of line continues east to Crystal Palace, beyond which the route has access to the Brighton Main Line. Access to the bay platform from this direction would require shunt movements.

The 2024 Engineering Access Statement v1 allows standard overnight line possessions between 02:45 and 04:45 which would mean that it would be difficult for freight trains to arrive or depart during this two hour period.

#### **Station Layout**

The entrance to the station is on the east side of the station.

Location of the bay platform.

Access to the platform is via a ramp and lifts.

#### **Station Access**

The station is located in a cutting with access to the platform via a ramp to a footbridge and then lifts from the footbridge to the platform. This may make it difficult to load and unload large quantities of freight.





#### **Station Overview**

Elephant and Castle station is located in the London Borough of Southwark. It is located on the four-track section of line between London Blackfriars and Loughborough Junction on the route from the Thameslink Core to Herne Hill.

The station has four platforms of between 149m and 161m length, which can accommodate between 7- and 8-car trains. In the standard hour, 4tph between St Albans and Sutton and 2tph between Blackfriars and Sevenoaks are operated by Thameslink, with additional Southeastern services in some hours. There are also additional peak services operated.

Services currently operate from all four platforms, although some are more intensively used than others. There may be potential to focus off-peak services on two platforms, freeing the other two platforms to allow freight services to unload and load.

#### **Network Access**

The station is located on the four-track 750V DC third rail section of railway from City Thameslink to Herne Hill. The station has good access to a range of destinations in the south, including the West London Line via the South London Line. the Chatham Main Line at Herne Hill and to the Brighton Main Line via Tulse Hill and Streatham. To the north, if freight is carried on passenger services, or dedicated trains are equipped for overhead as well as third power collection (and signalling rail requirements for equipment the Thameslink Core), both the East Coast and Midland Main Lines can be reached.

The 2024 Engineering Access Statement v1 allows standard overnight line possessions between 00:05 and 05:05 on one pair of tracks. Trains currently operate throughout the night over this section of route, therefore freight could operate at this time.

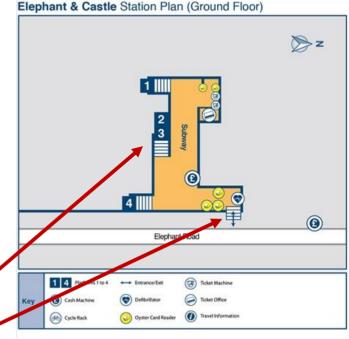
#### **Station Layout**

Access to all four platforms is via staircases from the subway.

The entrance to the station is via a staircase from the road.

#### **Station Access**

The station is located on a viaduct, with no lifts to street level. For this option to be viable for all but the smallest of loads, a means of step-free access to the platform would need to be found.





**C.5** 

#### **Station Overview**

Vauxhall station is the first station on the South Western Main Line from London Waterloo. It is located in the London Borough of Lambeth, between Waterloo and Clapham Junction, on an eight-track section of route (reducing to seven-track beyond Vauxhall).

The station has eight platforms of between 191m and 209m length, which can accommodate 8- to 10-car trains. The same 33tph South Western Railway services operating from London Waterloo in the off peak operate through Vauxhall, although only 20tph stop at the station, these services mainly comprising inner and outer suburban services. Additional services operate during the peaks.

Due to the intensity of service, it is unlikely to be possible to unload and load from passenger services during dwell times, however, if a platform could be freed during this time by consolidating passenger services onto seven platforms, Platform 1 could potentially be used to turnround a freight service.

#### **Network Access**

The station is located on the eight-track 750V DC third rail section of railway from London Waterloo to Clapham Junction. The location has good access to locations to the south-west of London and longer distance locations. Access to the West London Line might allow services from the Midlands and North to access Vauxhall and access to the Chatham Main Line and South London Line may be possible via the viaduct at Nine Elms, if reopened.

The 2024 Engineering Access Statement v1 allows similar requirements on track blockages to London Waterloo, again with either one set of four tracks open when the other is blocked. Passenger services operate at the station between 05:11 and 00:25.

#### **Station Layout**

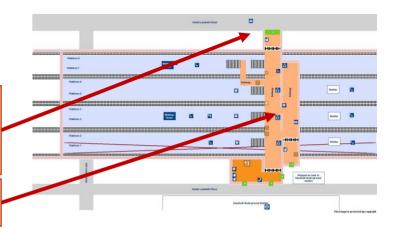
The entrance to the station via South Lambeth Road may be optimal for freight, given the availability of loading bays on the road.

Access to all eight platforms is via lifts from the subway.

#### **Station Access**

The station is located on a viaduct on the approaches to London Waterloo. Lifts are provided at the station down to subway level, which leads onto the street.







#### **Overview**

In total nine stations were given an amber RAG rating. These have been condensed into two possible amber locations to be reviewed further. The **evaluation criterion was based on** the station having four or more platforms and a train service which appeared to be at a level (in terms of trains per hour) that might allow one platform to be used by a freight service to load/unload and turnround. The two stations that have been put forward have been reviewed earlier in this section and the reasons for not including the other locations are provided below.

#### **Clapham High Street**

This station has a relatively intense passenger and freight service operating through it of four London Overground services per hour and up to five freight paths. Other tracks are available alongside the station, but these are used by the majority of Southeastern's services from London Victoria. Freight services continue to operate overnight. The network was considered too highly utilised to allow a freight service to spend long periods of time loading and unloading at the station.

#### **Denmark Hill**

Denmark Hill is served by a mix of London Overground, Southeastern and Thameslink services and is on a key freight route. It has four platforms and lift access to the street level. However, it is expected to be the case that there would not be the capacity to operate 9tph plus through freight services on one platform, if a platform was taken out of use for loading/unloading freight logistics.

#### **Gipsy Hill**

This station is on a two track section of line, served by six trains per hour. It is therefore unlikely to be suitable for a freight service loading and unloading for much of the day. It was given an amber RAG due to the relatively late line blockage in the Engineering Access Statement, which might allow a window for loading and unloading. However, the limited window for services has meant that other locations have been prioritised.

#### **Herne Hill**

Herne Hill is a four platform station served by Thameslink on two of the platforms and Southeastern on the other two platforms. A total of nine trains per hour operate through the station, some non-stop. As this station is located at a key junction, the reduction in operational flexibility that would result, if it were possible to move all nine trains per hour to operate on one platform, was considered too much of a constraint for this station to be put forward.

#### **London Waterloo East**

This station is on a four track section of line, which reduces to two tracks to the east of the station. The two track section indicated that it might be possible to focus services on two platforms, however at 14 trains per hour in the inter-peak, if it were possible, it is expected that there would be potential for a significant performance impact of doing so. This is an intensively used station with step-free access via a circuitous route through the main station, therefore other, less intensively used stations were prioritised.



#### **Peckham Rye**

This station is a four platform station, however the two platforms serve different routes which cannot be accessed from a single pair of platforms. One pair of platforms is served by four stopping, one passing and several freight paths per hour. The other is served by eight trains per hour. There appears to be little capacity available to stop freight trains at this location for loading and unloading.

#### **Streatham Common**

This station is another on a four track section with four platforms. However it is on the main route out of London Victoria, with 5 stopping services per hour and 10 fast services operating through the station, plus additional freight services. This intensity of service is unlikely to allow capacity allocation for a dedicated freight multiple unit concept.



Streatham Common station

#### West Norwood

West Norwood is similar to Gipsy Hill in that it is on a two track section and is served by six trains per hour but again there may be a gap between the last train and the start of the Engineering Access line blockage which could be used for freight. This station has therefore not been taken forward for the same reasons as Gipsy Hill.



Peckham Rye Station



West Norwood station





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