Cargo bike operations in London: a guide

Providing advice on rider and operator safe practices

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MAYOR OF LONDON

TRANSPORT FOR LONDON

EVERY JOURNEY MATTERS

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Cargo bikes are an innovative freight and servicing option for London, and help address key policy targets

Introduction and policy context

More businesses are turning to cargo bikes as an environmentally friendly and, in many cases, a more efficient alternative to vans

Our Cargo bike action plan, published in 2023, sets out the aim to make cargo bikes a leading option for last-mile freight and servicing trips. We state in Action 8 of the plan that we will update and publish guidance for operators and riders on safety and operating practices.

Purpose of this guidance

We have therefore developed this guidance to give advice and information to riders, businesses and other organisations already using, or looking to adopt, cargo bikes. The guidance is aimed at industry, planners, developers, logistics companies and local authorities. It covers:

- Use of cargo bikes
- Cost, ownership and regulation
- Training and rider behaviour
- Cargo bike operations, including battery safety, route planning and product handling

The main focus of this guidance is on cargo bike use for transporting goods and servicing. Standard, non-cargo, cycles used for food and other deliveries, and where goods are carried in a backpack, panniers or box, are excluded from this report. We will review this guidance periodically as new applications and business models emerge.

Background

While cargo bikes can be electrically assisted pedal cycles (EAPCs) or non-electric cycles, almost all cargo bikes that are used to carry parcels, food items, construction materials, waste, tools and people belong to the former category.

Cargo bikes enable active travel and therefore contribute towards making our city a healthy and attractive place to be. They can use cycle lanes and avoid congested roads, so reducing delivery times and operating costs. Cargo bikes can also access areas and routes that may exclude other vehicle types.

Cargo bikes are increasingly becoming part of daily life. Based on daily count data from our Active travel counts programme, cargo bike counts in central London increased from 4,915 cargo bikes in 2022 to 6,998 in 2023 – an increase of 42 per cent.

Cargo bikes are a safe, clean and efficient alternative to vans

In addition to shorter delivery times, cargo bike operators can also offer more reliable service levels while supporting the decarbonisation of freight. Research published in our Cargo bike action plan found that the cargo bike sector could replace up to 17 per cent of van kilometres in central London by 2030.

42%

increase in central London cargo bike daily counts from 2022 to 2023

Policy context

The Mayor's Transport Strategy aims for 80 per cent of trips in London to be made by walking, cycling and public transport by 2041. It also aims to reduce freight traffic during the central London morning peak by 10 per cent by 2026. The Mayor has announced his ambition for London to be net zero for carbon by 2030 to help tackle the climate emergency. These targets demand fewer and cleaner freight vehicles.

London Plan policies also encourage cargo bikes by calling for sufficient capacity for industry and logistics to be identified and protected, including for last-mile distribution.

Our Freight and servicing action plan sets out actions to support safe, clean and efficient freight operations, promoting cycle freight as an alternative mode that supports the shift from vans to cargo bikes.

Our Vision Zero action plan focuses on reducing road danger on London's streets, and aims to reduce the number of people killed and seriously injured on our streets to zero by 2041.

In addition, the Cycling action plan 2 sets a target for 40 per cent of Londoners to live within 400 metres of the strategic cycle network by 2030. An expanding cycleway network creates opportunities to use cargo bikes over a larger area. The cycle network is now four times the size it was in 2016, having expanded from an estimated 90km to more than 360km in 2024.

Cargo bikes are an innovative solution and address key policy targets. They deliver safer, healthier, environmentally friendly streets and reduce van-related congestion. We promote their growth by working with industry, conducting ongoing trials and by implementing the actions identified in the Cargo bike action plan. A further guide, Making and receiving cargo bike deliveries, provides practical steps and sets out the case for businesses considering receiving and making deliveries by cargo bike.

Table 1: How cargo bikes can support London's policy goals

Safer trips	Cleaner trips	Efficient trips
Vision Zero aims to eliminate all deaths and serious injuries from London's streets by 2041. • Cargo bikes pose less danger to vulnerable road users than vans and HGVs, and can operate safely in car-free zones	The Mayor has set his ambition for London to be a net zero carbon city by 2030. • Cargo bikes offer a clean alternative to van trips for last-mile deliveries	London has adopted the Mayor's Transport Strategy Healthy Streets Approach, which prioritises people and aims for 80 per cent of all trips in London to be made on foot, by cycle or using public transport by 2041. The Strategy also aims to reduce freight traffic in the central London morning peak by 10 per cent by 2026, and to reduce motor traffic in the capital by 10-15 per cent by 2041. This means that, in addition to shifting freight traffic away from peak times, automotive traffic needs to be reduced on London's roads. • Cargo bikes can avoid congested roads on many routes and offer an efficient alternative to van trips
A survey published by the European Cargo Bikes and Cycle Logistics Experts Group in 2022 found that: • Cargo bikes in commercial use are possibly the safest bikes in the world. After millions of kilometres of use in commercial fleets, not one fatal collision was reported, and there were few injuries to riders or the public	Research published in an Active Travel Academy/University of Westminster 2021 report used GPS data to compare routes taken by cargo bikes in London with those that vans would have to take to deliver the same parcels. Results showed that: • Cargo bikes emit 96 per cent fewer carbon dioxide (CO_2) emissions per kilometre compared to a typical electric van • Services provided by cargo bikes in London are on average 1.61 times faster than those performed by vans. Over a 98-day period, cargo bikes also saved more than 14,500kg of CO_2 and more than 20kg of nitrogen oxides	Waste management and recycling company First Mile operates more than 12 waste rounds by cargo bike in central London. • Its use of cargo bikes has resulted in the elimination of nine heavy goods vehicles (HGVs) and avoided 550,000kg of CO_2 in the last year (see case study on page 25 for further details)

The use of cargo bikes

Cargo bikes are very versatile, enabling operators to choose the type that is most appropriate to their application

The use of cargo bikes

Different cargo bike types and configurations are still evolving as their use expands to more applications

Cargo bikes are very versatile, and their size, configuration and application profiles vary considerably. They are well-suited to shorter trips in densely populated areas. As they have electric-assist capability, they are also able to operate over longer distances and in hilly terrain.

Operators should carefully choose the type of cargo bike most suited to their application. Load dimensions and weight, type of load, security considerations and distance travelled need to be considered when selecting the most appropriate cargo bike.

As cargo bikes are heavier than standard cycles and have a variety of manoeuvring capabilities, they are best operated by more experienced cyclists. Two-wheel cargo bikes offer familiarity for regular cyclists. Cargo tricycles and four-wheel options offer a 'van-like' experience to riders who may not have cycling experience, with the latter tending to suit organisations looking to replace vans. Other configurations are available, including six-wheeled cargo bikes, which are mostly for special applications and heavier loads.

Riders need to be aware of line-of-sight limitations where loads affect forward visibility, and blind spots where rear visibility is impacted by large boxes or loads.

Trailers

Cargo bikes have the capability to tow trailers that vary considerably in length, configuration and style. Bike and trailer loads should not be more than one metre (3.3 feet) wide to allow them to operate safely on cycle lanes and negotiate modal filters and other obstacles. These can include hostile vehicle mitigation barriers for counter terrorism, which have a maximum spacing of 1.2 metres (3.9 feet).

Some trailers include electric assist. Current regulations treat a trailer coupled to a towing cycle as a single vehicle. This means the cycle and trailer together must meet the 250-watt power EAPC threshold in order not to be classed as a moped and subject to the regulations relevant for that class of vehicle.

Standards for trailers are expected to be published in the upcoming European standard BS EN 17860 (Part 7) by November 2024. This standard will contain detailed technical requirements that trailer suppliers should aim to meet or exceed.

Cargo bikes are versatile and reliable

Cost and regulation

Cargo bikes are an operationally efficient mode of transport, and regulations and guidance are evolving to ensure they continue to operate safely

Cost and regulation

Cargo bikes can be more cost effective than vans in urban areas

In addition to making a valuable social and environmental contribution, cargo bikes can reduce delivery costs and be an economical investment.

Cost

While cargo bikes can cost between £5,000 and £16,000 depending on type, size and options selected, they are cheaper to operate, and (as operators have reported) can have lower delivery costs per parcel, compared to vans.

Funding schemes for cargo bikes can be sought and business leasing is sometimes available. Grant funding under the Ultra Low Emission Zone (ULEZ) van and minibus scrappage scheme can be used to switch van operations to cargo bikes. Borough-led rental schemes can also provide bikes to organisations looking to trial cargo bikes in their operations without having to purchase one.

European studies show that cargo bikes can be more cost effective than vans in urban areas. This is typically the case where distribution centres are less than 3.2km (two miles) from delivery routes, where delivery rounds are less than 9.6km (six miles) in length, and where the parcel drop rate is fewer than 10 parcels per stop. There are further cost savings from not needing to pay congestion, emissions or parking charges.

In its Delivering value report, research company Just Economics estimates that the hidden social and environmental costs associated with diesel vans in London total £2.46bn annually. On a per mile basis, the social and environmental costs of diesel vans are eight times higher than those of cargo bikes. The report also states that the environmental cost of a diesel van is 67 times greater than that of a cargo bike.

However, while cargo bikes are an operationally efficient mode, they cannot replace all van trips. Several factors determine where and how cargo bikes may be viable compared to vans (see Table 2 on page 10).

Cargo bikes reduce the dominance of motor vehicles

Cargo bikes are able to park near delivery and collection points

Table 2: Factors supporting and limiting cargo bikes

Supporting factors	Potential limitations
• Contribute to a business's clean air objectives • Reinforce a business's reputation as an advocate of active travel, health and wellbeing • Are safer for other road users than vans • Offer a flexible, adaptable mode able to support many different applications • Offer a last-mile solution that complements other modes (including rail and water) • Can access most pedestrianised areas and operate in space-constrained environments • Can park close to delivery and collection points, saving time and reducing trip distances • Can bypass heavy traffic areas via cycle routes • Are a quiet mode • Offer a lower total cost of ownership than vans	• Economic viability may be affected by low utilisation and low carried volumes • May not be as favourable as other modes for high-volume and large delivery items • Deliveries may be slower if there is a long distance between deliveries or hubs • Riders may feel unsafe on roads dominated by HGVs and faster moving traffic • Inclement weather could deter use • Require more frequent maintenance than vans; many operators need reliable external maintenance service providers

Security and maintenance

Operators need to protect their assets and have adequate insurance in place for both goods in transit and the asset itself. As cargo bikes are a relatively new area for many insurers, general or corporate policies may not adequately cover an operator's needs. This may be reflected in higher insurance premiums or poor responses to claims.

Bikes and their contents need to be kept secure. Cargo bikes are high-value items and are sought after by criminals, with component theft being on the rise as many components are common across cycle types. Security and safety equipment is strongly recommended, and the police security initiative Secured by Design offers help and advice in selecting approved security systems. Riders should be security aware at all times, especially when their personal safety may be at risk.

A regular maintenance schedule will ensure bikes remain safe, reliable and in good working order. Some cargo bike suppliers offer maintenance support in addition to warranties.

Safe operating practices must be followed at all times

Regulation

Regulation recognises cargo bikes as EAPCs that must have pedals, an electric motor and a maximum power output of 250 watts. They should not operate under power when travelling at speeds of more than 15.5mph. The motor should also show power output and the name of the manufacturer. Cargo bikes fall within the same class as pedal cycles and are permitted to ride on cycle paths and other places where pedal cycles are allowed.[1]

If bikes exceed EAPC specifications, they will need to be registered, insured and taxed as a motor vehicle. The rider will also need a driving licence and have to wear a motorcycle helmet. Work is under way in Europe to update manufacturing standards for cargo cycles.[2] Existing regulation should also be followed (see box, right).

Safety in the workplace remains a top priority. Documenting safe operating practices will help protect operators, riders and other people on the roads. General operating risks as well as those relevant to specific operations, or type of operations, should be identified and mitigated, for example the risks posed to cargo bikes by HGVs on construction sites.

1 In March 2024, the Department for Transport released a consultation to get views on increasing the maximum continuous power output of the electric motor to 500 watts from 250 watts and allowing throttle assistance up to 15.5mph (25km/h) without the need for type approval. The outcome of this consultation is not known

2 The European Committee for Standardization has established a working group to develop a technical EN standard for cargo bikes. The German (DIN 79010:2020-02) and French (NF R30 050-1) standards will serve as a basis for the new EN standard (BS EN 17860)

Cargo bikes: regulation

Current regulation relating to cargo bikes comprises:

- Health and Safety at Work Act 1974: provides a general framework to ensure health, safety and wellbeing in the workplace. It also defines the roles and responsibilities of employers and employees
- Manual Handling Operations Regulations 1992: addresses the avoidance, assessment and reduction of risks associated with manual handling
- Management of Health and Safety at Work Regulations 1999: states that employers must perform risk assessments, and provide health and safety information to employees
- Provision and Use of Work Equipment Regulations 1998: states that employers must ensure that all work equipment is safe to use, is suitable for its intended use, and is to be used by employees with the correct training
- Lifting Operations and Lifting Equipment Regulations 1998: states that lifting tasks must be performed by competent employees, and planned and carried out in a safe manner

Riders need to maintain professional standards on the road

Roles and responsibilities

Operators

As new services come to market, operators want to adopt fair and inclusive employment practices. However, they are often not fully aware of the needs and requirements of riders or where sound advice can be obtained. The Mayor's Good Work Standard initiative is a source of guidance and advice on fair pay and working conditions, workplace wellbeing, skills and progression, diversity and recruitment. The initiative also offers accreditation for micro, small, medium and large businesses.

Operators should provide personal protective equipment, and a risk assessment can identify what specific equipment is needed. This includes making reasonable adjustments for their staff and ensuring that personal protective equipment is fit for purpose, considering any special requirements. Operators should also understand the impacts of inclement weather on riders, and should provide clothing suitable for riding in adverse weather conditions.

Operators should plan suitable rest periods into rider schedules to avoid the risk of fatigue.

Riders

Riders represent the companies they work for, and are expected to display professional behaviour as well as being able to operate their equipment safely and courteously. They should be familiar with the behavioural characteristics of their bikes. For example, tricycles are more stable than two-wheel cargo bikes, but can tip over if not ridden correctly. Riders are also responsible for their health and safety, and should be aware of road and other conditions such as isolated routes that could affect safety and security.

Both operators and riders are responsible for maintaining professional standards that support and promote cargo bikes as a desirable and viable alternative to vans.

Training and behaviour

Training is integral to safe bike and cargo operations, with both riders and operators having a role to play in ensuring right behaviours

Training and behaviour

The right training and support will allow riders to be fully competent, the public to feel safe, and cargo bikes to be promoted as a sustainable transport option

Cargo bikes are larger than, and have different handling characteristics to, standard cycles and are not suitable for all riders. Riding a cargo bike, especially in a busy urban environment, can be physically and mentally challenging. Riders should display an aptitude and capacity to be trained, and be able to cope with varying weather conditions, and the physical demands of handling cargo bikes and their loads.

The industry has high rider turnover, which can be disruptive, time consuming and costly for dedicated cargo bike operations. Riders should be well trained as this reduces risk to both operators and the public. Competent riders will have increased confidence and are more likely to stay in the industry.

To date, women and those from Black, Asian and minority ethnic backgrounds have been under-represented, which is something industry should seek to address through inclusive practices and recruitment. Quality recruitment and providing attractive conditions and training programmes will offer people from a range of backgrounds the opportunity to become riders.

In addition to ensuring riders are able to operate their cycles safely, operators should provide a supportive rider culture.

The right training

With the right training and support in place, riders will be enabled to be fully competent, the public will feel safe, and cargo bikes will be promoted as a sustainable transport option that enhances the reputation of the companies that use them. Riders doing commercial trips on cargo bikes should have a greater level of competence and confidence than casual riders, and should understand what represents good conduct.

We are working with our stakeholders to develop a safety standard for cargo bikes in London. This includes working with the Bicycle Association and industry towards a National Code of Conduct that is a widely recognised standard for training.[3] Ongoing continuing professional development programmes will ensure riders remain well trained, contributing towards rider retention.

Riders require training and guidance to be safe

3 Draft training and conduct standards have been issued for comment by the Bicycle Association and are due to be consulted on later this year

Basic cargo bike training should include:

- A knowledge of the Highway Code as riders will have to travel on public roads as well as on cycle paths
- Training on how to carry out safety checks, ride safely and correctly position and secure loads
- Practical elements to make riders familiar with operating and manoeuvring a loaded cargo bike in segregated and shared road spaces
- Use of mirrors and awareness of blind spots

Competent and accredited training providers should be used. We also recommend that riders complete the National Standard for Cycle Training to a Bikeability Level 3 standard as a foundation before doing specific cargo bike training.

More specialised or industry-specific training may be required to enable riders to handle and transport products safely in their sector. Specialist training may also be needed for the management and manoeuvring of trailers and for the handling and transportation of hazardous goods.

Basic training should include a knowledge of the Highway Code

Riders must learn how to manoeuvre the bike in shared road spaces

In addition to skills training, we recommend that cargo bike riders and other people riding for work receive training on how to deal with conflict and confrontation as they may face hostile behaviour in the course of their work. Additional training on specific conflict scenarios is advised. Health and Safety Executive (HSE) guidance is also available on protecting employers and employees from violence and aggression.

Cargo bikes are not only operated by professional riders in the commercial sector – they are also used in a non-professional capacity. Although this guide does not specifically address domestic cargo use, it is recommended that those looking to use cargo bikes, either as a casual hire to transport goods, or for the purposes of carrying passengers or animals, should undertake training courses up to Bikeability Level 3, preferably with a cargo bike component. Most local authorities with cargo bike hire schemes provide training.

Riding cargo bikes requires training and practice

The right behaviour

Both riders and operators have a crucial role to play in ensuring right behaviours for cargo bike operations. Riders need to behave in a professional and considerate way, and operators should understand their responsibilities towards riders and the public. Poor behaviour has a detrimental effect on public safety, and fosters negative views on cargo bikes, which could result in them being seen as unsafe, or as a nuisance.

Operators should support diversity and inclusion as it brings different perspectives, helps challenge stereotypes and presents an industry that reflects the diversity of our society. This also broadens the employment market in a sector that has had difficulty in recruiting and retaining staff.

While operators may have their own procedures for onboarding and setting out their expectations for riders, we recommend that they be aligned to the Bicycle Association National Code of Conduct.[4] There are also further recommendations that can be followed by operators and riders. A London Safety Standard, under development, may set out further safety compliance expectations for riders and operators in London.

Well-trained riders who have a clear understanding of what is required of them and who receive sound and relevant feedback are more likely to be satisfied in their jobs and to behave professionally. Good training and behaviour reduces collisions and the downtime caused by the abuse of vehicles. This is an industry with high staff turnover, and satisfied riders are more likely to remain with an operator.

It is important that all incidents are recorded and communicated, as this provides opportunities to improve procedures and avoid any future issues. Even minor incidents and near-misses can provide evidence to support better practices.

4 The Code of Conduct is currently under development, and is being reviewed by members before it goes out to public consultation

5 Advice provided by the Metropolitan Police Cycle Safety Team, who worked with TfL to produce this guidance

Advice on rider good behaviour[5]

It is imperative that cargo bike riders adhere to road traffic regulation, and operate considerately in line with Vision Zero. They should also be aware of public perception, and how this can affect the reputation of companies using cargo bikes.

Riders should:

- Maintain viable vision in front of the bike. Riders should be able to observe any defects in the road surface and have time to take evasive action to accommodate sudden obstructions
- Ensure that stacked loads do not compromise their vision or the stability of the bike. Loads should be secured to the cargo bed in such a way that movement is kept to an absolute minimum
- Ensure that loads with protruding items are not only secured, but also covered to reduce the chance of items becoming ‘moving missiles’ in the event of a collision
- Comply with existing EAPC regulations and be aware of any changes to legislation (this applies to operators also)

When carrying passengers, safety must be uppermost

Passenger safety

When carrying passengers, special considerations apply to both riders and operators, as follows:

- Passenger safety must not be compromised, as this is the top priority
- Passengers moving around can affect stability
- The gross weight for cycle, rider and passengers should not exceed what is stated in the manufacturer's guidelines
- Appropriate accessories such as seat belts, handholds, foot, leg and weather protection, and support for passengers should be in place
- Protocol and risk assessments should include how passengers access and exit the seating area, as well as how they behave when the bike is moving
- Specific rider training for carrying passengers is strongly recommended. Some manufacturers provide equipment and guidance to operators that are considering carrying passengers

The above guidance may be superseded by regulation as described below.

Pedicabs (London) Act 2024

Cargo bike operators who carry passengers, should be aware of the Pedicabs (London) Act which came into effect on 24 June 2024.

The Act gives TfL the power to regulate pedicabs in London. The regulations are under development and will be subject to consultation.

Once regulations are in force, they are expected to affect cargo bikes that also carry fee-paying passengers and, as such, it is expected that operators and drivers will be required to be licensed by TfL.

Safety

When carrying passengers, special considerations apply to both riders and operators

Cargo bike operations

Safe operations include performing risk assessments and route planning, and considering how goods will be delivered

Cargo bike operations

Carrying out proper safety procedures, assessments and checks will enable safe and efficient deliveries, and ensure the industry develops a good reputation

Cargo bikes must be well maintained and safe to operate. Pre-trip checklists should be in place, to be completed by riders, and operators should adopt planned maintenance routines. Breakdowns and failures can be expensive as well as inconvenient, requiring recovery time and resulting in in-service disruptions. Critical component failures can also present a safety risk. Service contracts with providers are recommended if in-house maintenance capacity is not in place.

Battery safety

Battery safety is important to prevent the risk of fire, and operators should be aware of the type of fire risks posed by batteries. Last year, the London Fire Brigade launched a Charge Safe campaign in response to rising numbers of e-bike and e-scooter fires in London.

In addition to using batteries that comply with UK safety standards, good battery care and regular checks are required. Proper storage, fire mitigation measures, and pre-trip checks are all important, and the available information on the safe storage and disposal of batteries should be sought. The Bicycle Association provides a comprehensive guide on using and storing e-bike batteries.

Fire cabinets can contain battery fires for a period, allowing time for emergency services to deal with a contained fire. The EN 144470-1 standard requires safety cabinets to be fire resistant for 90 minutes, although some manufacturers exceed this standard. Fire suppression measures that neutralise electrolyte decomposition within lithium-ion batteries should be used.

Route planning

It is important that operators carry out route planning, taking into account factors such as terrain, infrastructure and load characteristics.

When considering the terrain, operators must be aware of the fact that cargo bikes can travel on routes with different surface conditions and features, all of which present differing types of risk. Routes can vary from dedicated cycling infrastructure to busy roads dominated by cars, vans and HGVs. Better understanding the route characteristics faced by their riders will enable the provision of the necessary support and training.

Route planning is vital to efficient cargo bike operation

Operators should consider dedicated cycling infrastructure as this is a safe and convenient option that can reduce delays. They should also ensure that cargo bikes are able to access planned routes, and can benefit from any segregated cycling facilities.

Route planning should also look at load characteristics as cargo bikes take up more space than standard cycles. Turning manoeuvres and width constraints are important, while planning should take account of the fact that cycle lanes behind bus stops (bypasses), hostile vehicle mitigation measures and narrow cycle lanes or tracks with tight bends may be difficult to negotiate.

Maintenance

Cargo bikes must be well maintained and safe to operate. Operators should have planned maintenance routines, as breakdowns and failures can be expensive and inconvenient

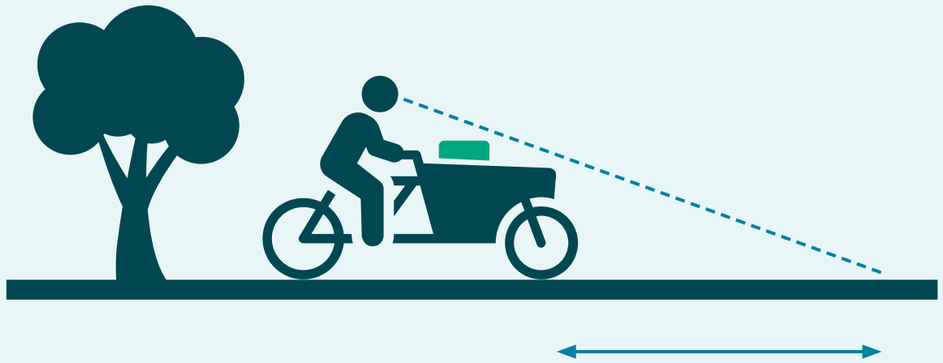
Risk assessments

When carrying out risk assessments, operators should look at the volume of traffic on routes – where feasible, high-traffic areas should be avoided as this can reduce efficiency and increase risk. Route risk assessments should identify the likelihood and potential severity of events affecting riders and the public, and develop avoidance or mitigating measures to address significant risks. These assessments should be carried out by competent people with local knowledge and experience using cargo bikes.

Assessments also help operators and riders understand their riding environment, raise awareness of any areas requiring special consideration and provide direction on preferred routes and those to be avoided. Risk mitigation measures could include:

- Ensuring riders are confident with the route and terrain
- Making riders highly visible
- Ensuring bikes are properly maintained, and
- Having an effective reporting system in place for signalling issues or operational problems

In addition to addressing risk, route assessments can identify whether there are obstructions or hindrances at delivery points. For example, deliveries with trailers may be difficult to accommodate, while some facilities do not support cargo bike deliveries and may even prohibit them from loading bays and facilities.



Good visibility in front of the bike is paramount

Cargo bike product handling

Positioning and securing loads correctly on cargo bikes is important to ensure stable loads and safe trips. In addition to load stability, riders should have good visibility, especially of the path in front of, and behind, them.

Positioning loads and visibility

We have worked with the Metropolitan Police Cycle Safety Team to develop guidance on desirable load height and widths to ensure good forward visibility for riders. The illustration above shows that a rider should have an unobstructed view of the road in front of the bike. Safe load height will vary depending on the height of the rider.

Further work is needed to understand the impact of different loads on braking distances. Riders need to be familiar with manoeuvring a loaded bike, and riding with a load should be included in rider training.

Securing loads

Operators and riders are responsible for loading and transporting goods safely. This requires that the goods be properly secured, remain stable and do not move while in transit.

As not all loads or cargo bike configurations are the same, loads must be secured in a way that is appropriate for the type of cargo and bike being used. The load restraint system must prevent movement. On flatbed cargo bikes, loads should be secured with strapping. Loads on bikes with boxes should be properly positioned to ensure stability, with heavier loads being placed at the bottom.

Whoever is responsible for loading a cargo bike needs to consider axle weights, bike and load stability to ensure the bike and its load are safe before starting a journey. HSE guidance on loading should be consulted for information on general loading practices.

The type of material selected for securing cargo should not create alternative risks, and specific cargo bike manufacturers' loading guidance should always be followed.

Any load carried on the bike needs to be secure and stable

Other load considerations

Loads should be safe as well as secure. Some operations require the carrying of items that are classified as dangerous goods. There are nine different dangerous goods classifications that range from products with low levels of danger, such as paints, solvents and pesticides, to highly dangerous products, such as explosives, flammables and fuming acids.

Before handling a product, operators and riders should ensure that it is correctly packaged, and complies with the handling and transport requirements for that product.

Weather and other conditions that may affect product safety and damage should be taken into account. Goods must remain secure and stable for the duration of the trip.

Loads must also be protected in transit. Locks and other devices used to secure bikes and goods must be functional and of good quality. The official police security initiative Secured by Design provides a recognised standard, and lists security products that have achieved the police security standard.

Delivering to site

Delivery locations should be safe and secure, and goods handling should not result in a nuisance to the public. Some delivery routes remain similar over time and so riders will be familiar with how to deliver safely and conveniently. For example, with waste delivery by cargo bikes, the waste collection routes are set and the collection points remain the same.

Other delivery routes may change daily, for example those involving the delivery of parcels to businesses, offices and homes. Drop-off points may present different parking and unloading challenges, and general or specific route assessments can prepare riders for negotiating these.

For retail and other non-construction deliveries, riders should park in a way that does not prevent access by pedestrians.

There should also be enough clearance for people using pushchairs or wheelchairs. Riders must ensure that bikes do not hinder traffic as well as other operations at the kerbside.

Deliveries to construction sites can be dangerous due to moving heavy equipment such as HGVs and mobile plant, and unsuitable site conditions. Cargo bikes must be kept separate from HGVs on construction and other sites with mixed traffic. Temporary delivery areas with safe access for bikes can be constructed behind existing site traffic management structures. Site marshals should also be equipped to manage cargo bike deliveries.

It may be necessary to liaise with the local highway authority to assess and agree on parts of the roadway that can be formed into cargo bike loading areas.

Case studies

Cargo bikes can be used in many applications. We are grateful to the organisations that provided the following case studies – each describes how that organisation uses cargo bikes, the benefits gained and challenges overcome

Case study: Cycle Connect

Application
- Since 2008, Cycle Connect has used electrically assisted tricycles to deliver goods and provide passenger transport

- Cycle Connect works with a variety of organisations supplying a service for people who are less mobile, isolated or who have long-term health conditions

Operation
- Cycle Connect operates as an active goods collection service for passengers experiencing barriers to access. People have the opportunity to cycle in a comfortable environment and to purchase and collect goods directly

- Riders are trained to operate the articulated vehicles. They are also given equality and inclusion training to enable them to work with the communities being catered for

Benefits
- Up to three passengers can be carried, excluding the rider. Loads can also be transported by using adapted cages

- The tricycles can cover greater distances when carrying people and loads through the use of up to three batteries

- Cycling infrastructure can be used, so avoiding the main road network

- The service provides access to physical exercise, thus offering health benefits

- The service brings people together socially, and can replace community transport buses

Bikes
- Van Raam front unit and train on the rear. Wheel strength is upgraded for London roads

- The tricycles offer customised storage in addition to passenger transport

- The combined weight for each unit is 280kg – 560kg gross weight when linked together

Challenges
- Breakdowns and mechanicals: A fleet manager is able to fix issues on the road; there is also a van if a unit needs to be brought back to the workshop

Cycle Connect boosts community exercise and social networks

The fleet is planned to expand

Ecofleet's last-mile delivery service has been operating since 2019

Two-wheel Urban Arrow electric cargo bikes are used

Case study: Ecofleet

Application

- Ecofleet started up in September 2019 as a last-mile delivery service operating electric cargo bikes
- Clients take advantage of the shorter delivery times made possible through the riders' use of cycle lanes

Operation

- Ecofleet focuses on two-wheeled cargo bikes
- Riders are trained to Bikeability Level 3
- Riders are familiar with the Highway Code, and trained in the effects of weather, personal safety and typical challenges faced when negotiating London's busy roads

Benefits

- Cargo bikes are a clean mode of transport that offer sustainable zero-emission deliveries. They support forward-thinking companies that are concerned about climate change
- Speed and efficiency are further benefits to the clients' experience
- Cargo bike riders benefit from being outdoors, and participating in exercise and active travel

Bikes

- Urban Arrow two-wheeled electric cargo bike with a front-loaded cargo box offering 600-litre volume capacity
- The bike's light frame, electric pedal assist, stepless gear shifting and low point of gravity make it easy and pleasant to ride

Challenges

- Staffing: As this is a transient industry, it took time to develop a team due to staff turnover

Case study: First Mile

Application

- First Mile deploys more than 12 cargo tricycles throughout central London to collect recycling in a bid to reduce greenhouse gases, pollution and congestion
- Cargo tricycles collect waste-filled sacks from businesses, dropping them into bins at consolidation points. Low Emission Zone-compliant trucks then collect the sacks and take them to a sorting facility
- First Mile started up in 2004. It plans on scaling up to 25 tricycles by the end of this year, and to 75 by 2028

Operation

- Tricycles collect mostly sacks and cardboard. The cage at the back can fit approximately 45 sacks, with a maximum payload of 200kg
- Riders carry eight to 10 full loads per round, unloading regularly at consolidation sites scattered around central London

Benefits

- Six cage trucks and three compactor trucks have been taken off the road as a result of First Mile's 12 waste collection rounds
- In the last year, First Mile has avoided the 220,000 miles driven, and 550,000kg of CO_2 that would have been emitted, by HGVs
- Tricycles are silent compared to noise levels of 100 decibels per truck, and so noise pollution is avoided
- First Mile has created more than 15 jobs through its Rider Academy

Bikes

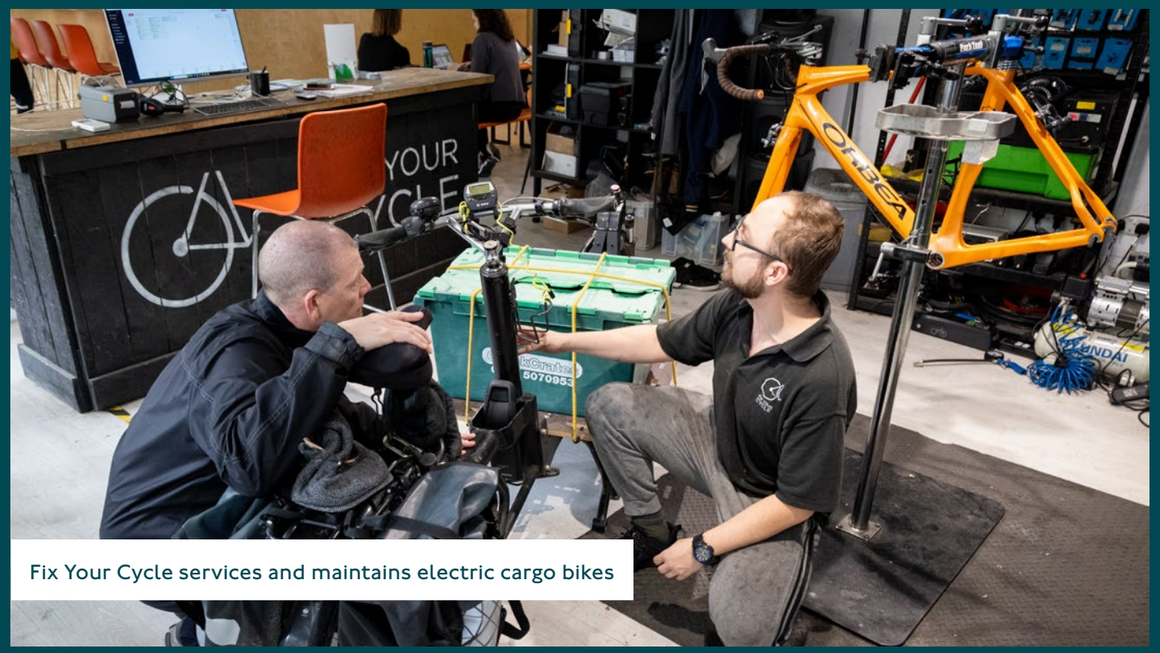
- Tailor-made Maxpro cargo tricycle, with a custom cage

Challenges

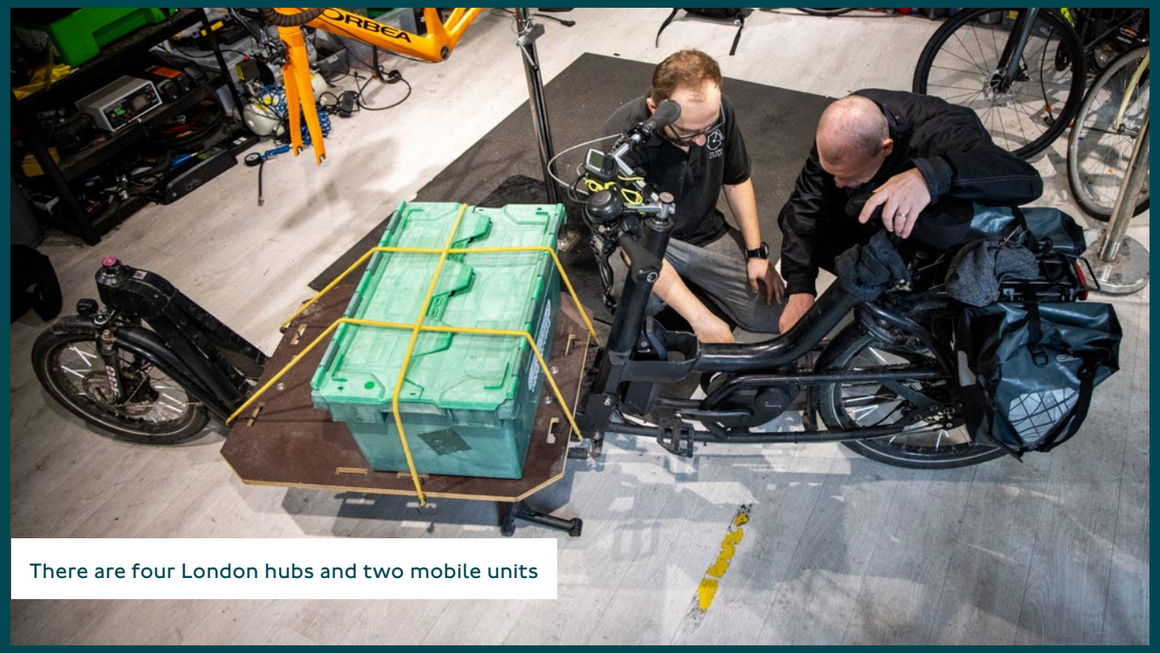
- Demand: The tricycles have been very successful, with high customer demand. First Mile has been working to meet this demand
- Sites: It has been a challenge to find central London consolidation sites for unloading. First Mile is working with business improvement districts and estates to unlock more sites

First Mile's cargo tricycles collect recycling from businesses

First Mile has enabled the creation of more than 15 jobs



Fix Your Cycle services and maintains electric cargo bikes



There are four London hubs and two mobile units

Case study: Fix Your Cycle

Application
- Service and maintenance of business-to-business electric cargo bikes across the capital and beyond since 2021
- Four hubs in London plus two mobile units, with plans to expand to Manchester and Birmingham

Operation
- Mobile units cover businesses within the M25, providing regular preventative maintenance and servicing on site

Benefits
- For last-mile deliveries, cargo bikes now travel faster through London than vans, reducing congestion, emissions and costs, and enabling quicker delivery
- With regular maintenance on site, downtime is minimised, keeping fleets on the road and maximising the client's return on investment
- Partnering with the main cargo bike vendors ensures access to the required technical resources and proprietary parts

Bikes
- The two Rad Power cargo bikes (RadWagon and RadRunner) are customised to carry the wide range of necessary tools and spares

Challenges
- Ease of operation: It is important to keep everything organised and accessible while working from the bike

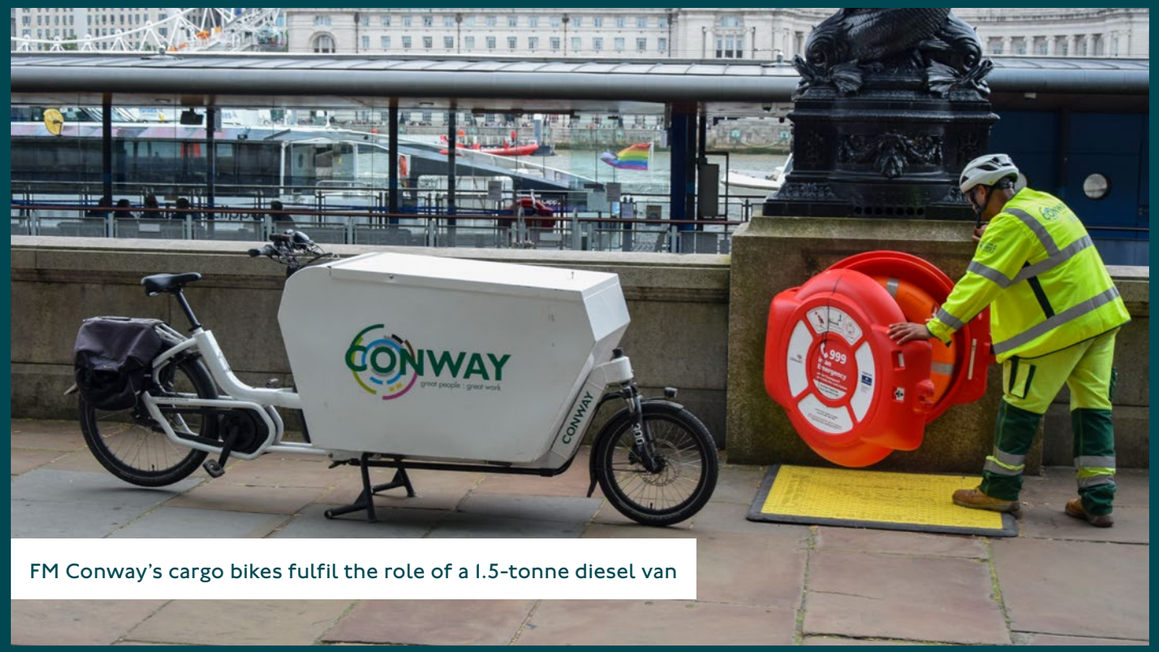
Case study: FM Conway

Application

- FM Conway was founded in 1961. Electric cargo bikes have been introduced to its structures division to help progress its net zero strategy

Operation

- Electric cargo bikes are used for multiple reactive and small maintenance jobs, fulfilling the role of a 1.5-tonne diesel van
- Each Urban Arrow XL electric cargo bike has a recommended gross weight capacity of 275kg (bike, rider and load). The Vok XL has a 200kg payload
- FM Conway would like to see the electric cargo bike fleet expand in future, replacing more diesel vans and pushing towards a net zero future



FM Conway's cargo bikes fulfil the role of a 1.5-tonne diesel van

Being zero emission, the bikes deliver marked carbon savings

Benefits

- Electric cargo bikes are fast, flexible and easy to ride
- The bikes are zero emission, delivering significant carbon savings. Just one electric cargo bike saved more than 2,700kg of CO_2 from June 2020 to February 2024 compared to a 1.5-tonne van
- Cargo bikes can be more efficient than vans, with the bikes cutting through the busy London traffic

Bikes

- The fleet currently consists of two Urban Arrow bikes with an additional trailer option, and one Vok XL that offers four-wheel drive, indicators, shelter for the rider and an extra-large cargo compartment

Challenges

- Improvements: FM Conway is receiving daily, first-hand feedback from its riders on issues or ideas for improvements. It is currently working to understand the limits of the Vok XL, and how to gain maximum performance from this bike

HSS Hire's cargo bike has reduced delivery time and costs

Loads in excess of 100kg in weight can be carried

Case study: HSS Hire

Application
- HSS Hire was founded in 1957
- The HSS electric cargo bike is used for the delivery and collection of smaller items
- The bike fits easily into the operation, and saves time in addition to adding value and supporting environmental goals
- HSS is looking at increasing its fleet in areas where it could have a positive impact

Operation
- The electric cargo bike is used for deliveries, collections and exchanges. Using the bike has reduced delivery time and cost compared to vans

Benefits
- The electric cargo bike provides clear time-saving benefits
- It offers cost savings as there are no fuel costs (based on avoiding substances that upon combustion produce usable amounts of energy)
- Use of the bike reduces the organisation's carbon footprint
- These benefits are felt not just by HSS but also by its customers

Bikes
- Urban Arrow electric cargo bike
- The XL version is most suitable as it has a large, secure box to help carry loads in excess of 100kg in weight

Challenges
- Best practice: HSS sought advice from other electric cargo bike companies and TfL on best practice in recruiting riders
- Integration: TfL provided guidance on how best to use and integrate the electric cargo bike into operations

Case study: London Borough of Hackney cargo bike share

Application

- The London Borough of Hackney's cargo bike share launched in September 2021. It was the UK's first on-street, on-demand electric cargo bike-sharing service, operated in partnership with micromobility company Beryl
- There are eight bikes in four locations across Hackney, with more hubs planned. The City of Westminster now also runs a similar scheme

Operation

- Since inauguration, more than 820 journeys have been undertaken by 310 users
- Residents use the bikes to move house or take items to the recycling centre
- Tradespeople use cargo bikes to move carpentry and tools between sites
- Logistics companies use the bikes as a buffer fleet when they need extra bikes

Benefits

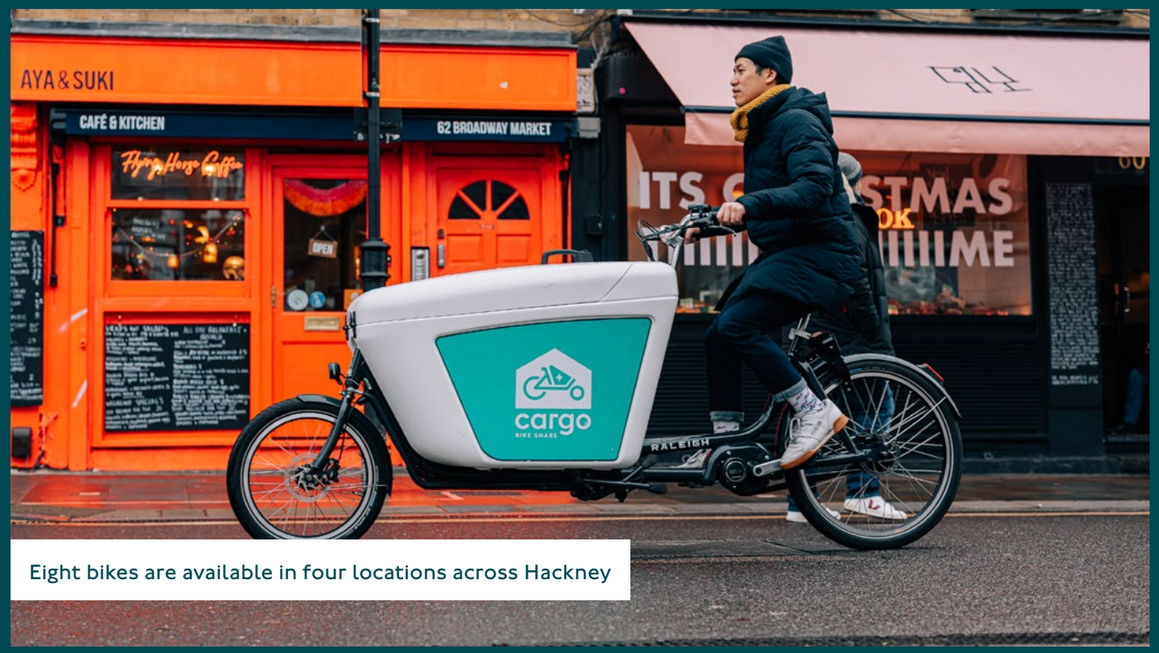
- Cargo bikes are now the preferred option for many as they are a fast, reliable and environmentally friendly way to travel, with health benefits to the user
- Cargo bike share provides a solution to two of the barriers to cargo bike usage, namely cost and storage
- Cars/vans are taken off the road: 50 per cent of users say they would have used a car or van if they had not had access to the cargo bike share

Bikes

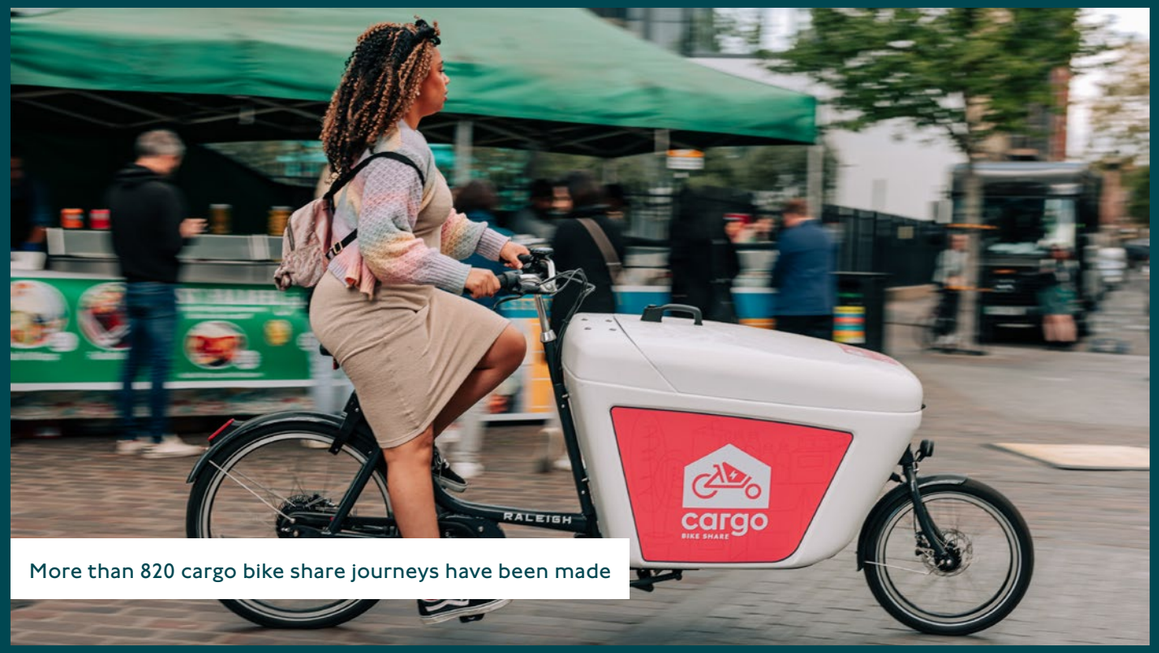
- Raleigh Pro e-assist cargo bike with lockable box
- With the opening up of new hubs, different models of bike will be introduced to the scheme, including ones with an open box (likely to be the Babboe City)

Challenges

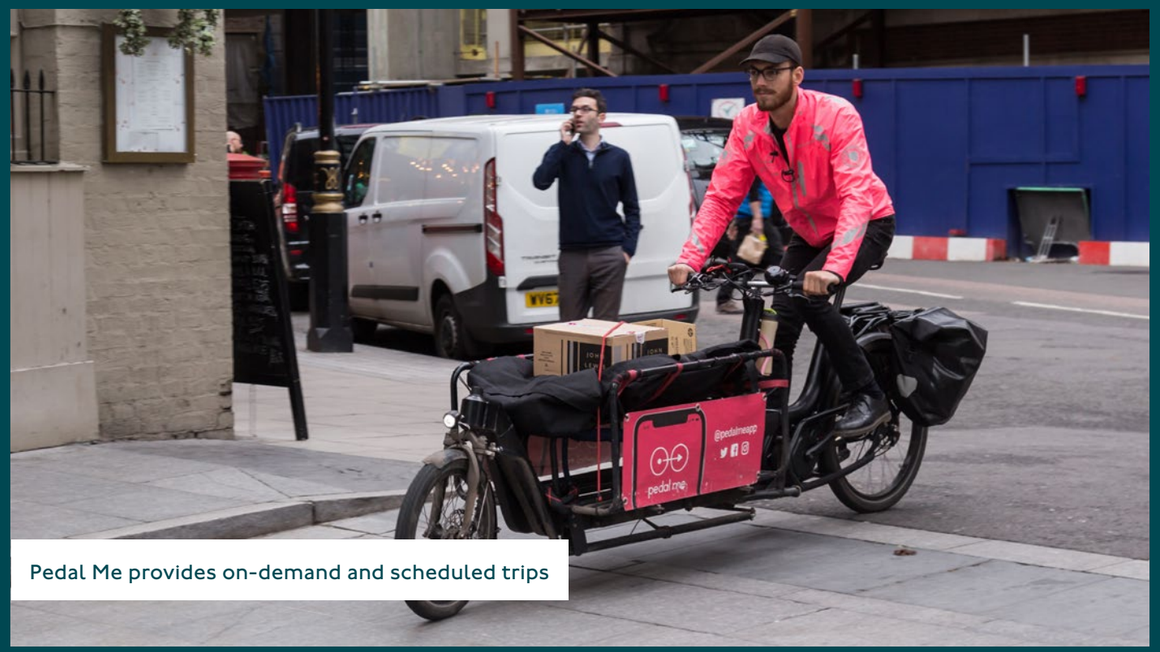
- Training: riding a cargo bike can be a new experience for many. The Zero Emissions Network offers free cargo bike training for local businesses, which is planned to be expanded to include residents



Eight bikes are available in four locations across Hackney



More than 820 cargo bike share journeys have been made



Pedal Me provides on-demand and scheduled trips

The cargo platform can transport both cargo and passengers

Case study: Pedal Me

Application
- Pedal Me has used cargo bikes for logistics and passenger transport since 2017

Operation
- Pedal Me works both with private individuals and business customers
- It provides on-demand and scheduled delivery trips
- Passenger transport is booked via an app. Examples include school runs, leisure rides and wedding transport

Benefits
- Efficient operations in central London are enabled by the type of bike used and effective training
- Cargo bikes enable faster pick-ups and drop-offs than vans as they can manoeuvre and park close to delivery points. This helps to reduce transit times

Bikes
- Urban Arrow Cargo XL two-wheel ‘long john’
- The proprietary cargo platform can transport both cargo and passengers
- Additional trailer capacity provided if required

Challenges
- Risks/consistency: Comprehensive training for all staff reduces risk and offers service consistency to clients
- Loads: Bespoke training on difficult loads allows riders to be adaptable and carry almost any type of load

Case study: Serco eCargo

Application
- Serco eCargo provides a battery swap service using electric cargo bikes and electric vans. It has provided this service for the Santander Cycles e-bike scheme since September 2022

Operation
- Electric bikes undergo an average of 27 battery swaps a day, or 814 a week during peak season

Benefits
- Cargo bikes offer a flexible, accessible and manoeuvrable solution to fast-changing customer needs
- When utilising cycling infrastructure, cargo bikes are capable of maintaining speeds of up to 15.5mph (the maximum legal electrically assisted speed). The normal average traffic speed is 8-12mph
- Operating costs are cheaper than those for vans, and there are no congestion or ULEZ charges
- Riders can take more direct routes than van drivers, and can park at the kerbside
- Riders experience wellbeing and job satisfaction, preferring cargo bikes to electric vans

Bikes
- Urban Arrow Cargo L
- Bike weight is 64kg (47kg bike plus 17kg box), with a recommended gross weight capacity of 275kg (bike, rider and load)
- Range is 40-100 miles; two Bosch 500Wh batteries are used for extended range
- Top assisted speed is 15.5mph
- Rohloff gearing with Bosch Cargo Line motors

Challenges
- Confidence: New rider confidence was addressed by providing specialised training
- Downtime: This is being addressed by tracking bike movements and an in-house preventative maintenance programme

Serco eCargo works with the Santander Cycles e-bike scheme

The bikes are involved in an average of 27 battery swaps a day

Parcels are processed at Zedify's hubs, and put on to cargo bikes

Zedify operates 230 cargo bikes across nine UK cities

Case study: Zedify

Application

- Zedify has used cargo bikes as part of its last-mile delivery service since 2018
- Zedify's model was designed around cargo bikes from the very start
- Speed, reliability and volume/weight capacity are key requirements in the fleet
- Zedify currently operates a fleet of 230 cargo bikes across a nine-city UK network, with plans to grow further

Operation

- Parcels arrive at Zedify's edge-of-city hubs from across London and all over the UK. They are then sorted, consolidated and put on to cargo bikes
- The coverage area usually extends to about a five-kilometre (three-mile) radius from each hub
- Zedify hubs follow a wide range of formats. Being flexible is important in cities as space is limited. One hub is an old underground car park in a block of flats; another is a yard where Zedify has installed container-style work units

Benefits

- Zedify's research shows that its cargo bikes emit 98 per cent less CO_2/km compared to diesel vans, and 96 per cent less CO_2/km compared to a typical electric vehicle
- Zedify's model supplies online shopping customers with Living Wage-employed riders. It provides opportunities for retailers to co-brand delivery touchpoints, including the bikes themselves, and offers flexibility and visibility around delivery time windows

Bikes

- A wide range of cargo bikes including Urban Arrows, Iceni trikes and electric assisted vehicles
- With its own-design bike, the 'Gtrike', Zedify has created a bike that is fast, durable and with short manufacturing lead times

Challenges

- Investment: Cargo bike operators are keen to see investment in appropriate infrastructure to help cargo bikes become adopted more quickly. Zedify's team has engaged with policy leaders across national and local government
- Technology: Zedify has raised funds from investors to help develop technology that makes its service easy to use, helping it to scale at pace, and create healthier, cleaner, more liveable cities of the future

Further reading

Further resources are available for more detailed information. A selection of recommended and relevant documents is set out below

Mayor's Transport Strategy

London Plan

Vision Zero action plan

Cycling action plan 2

Cargo bike action plan

Making and receiving cargo bike deliveries

Freight and servicing action plan

Guide to light freight trials by water

Cargo bikes guidance is in place to ensure their safe operation

About us

Part of the Greater London Authority family led by Mayor of London Sadiq Khan, we are the integrated transport authority responsible for delivering the Mayor's aims for transport. We have a key role in shaping what life is like in London, helping to realise the Mayor's vision for a 'City for All Londoners' and helping to create a safer, fairer, greener, healthier and more prosperous city. The Mayor's Transport Strategy sets a target for 80 per cent of all journeys to be made by walking, cycling or using public transport by 2041. To make this a reality, we prioritise safety, sustainability, health and the quality of people's experience in everything we do.

We run most of London's public transport services, including the London Underground, London Buses, the DLR, London Overground, Elizabeth line, London Trams, London River Services, London Dial-a-Ride, Victoria Coach Station, Santander Cycles and the IFS Cloud Cable Car.

We manage the city's red route strategic roads and are responsible for the maintenance, management and operation of more than 6,000 sets of traffic lights across the capital. The London boroughs are responsible for all the remaining roads within their boundaries. The experience, reliability and accessibility of our services are fundamental to Londoners' quality of life. Safety remains our number one priority and we continue to work tirelessly to improve safety across the network for both colleagues and customers.

Our vision is to be a strong, green heartbeat for London. We are investing in green infrastructure, improving walking and cycling, reducing carbon emissions, and making the city's air cleaner. The Ultra Low Emission Zone, and fleets of increasingly environmentally friendly and zero-emission buses, are helping to tackle London's toxic air. We are also improving public transport options, particularly in outer London, to ensure that more people can choose public transport or active travel over using their vehicles.

That is why we are introducing the outer London Superloop bus network, providing express bus routes circling the entire capital, connecting outer London town centres, railway stations, hospitals and transport hubs.

We have constructed many of London's most significant infrastructure projects in recent years, using transport to unlock economic growth and improve connectivity. This includes major projects like the extension of the Northern line to Battersea Power Station and Nine Elms in south London, as well as the completion of the London Overground extension to Barking Riverside and the Bank station upgrade.

The Elizabeth line, which opened in 2022, has quickly become one of the country's most popular railways, adding 10 per cent to central London's rail capacity and supporting new jobs, homes and economic growth. We also use our own land to provide thousands of new affordable homes and our own supply chain creates tens of thousands of jobs and apprenticeships across the country.

We are committed to being an employer that is fully representative of the community we serve, where everyone can realise their potential. Our aim is to be a fully inclusive employer, valuing and celebrating the diversity of our workforce to improve services for all Londoners.

We are constantly working to improve the city for everyone. This means using information, data and technology to make services intuitive and easy to use and doing all we can to make streets and transport services accessible and safe to all. We reinvest every penny of our income to continually improve transport networks for the people who use them every day. None of this would be possible without the support of boroughs, communities and other partners who we work with to improve our services. By working together, we are creating brighter journeys and a better city.

July 2024

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