

# Cargo bike feasibility

A TfL & FM Conway  
collaboration



EVERY JOURNEY MATTERS

# Introduction

## What are Cargo Bikes?

*Cargo bikes are bicycles that have been specifically designed to carry cargo, be it heavy or light, big or small. Cargo bikes take many forms, ranging from two to the three-wheel cargo-trike models, to custom built four-wheel frames with electric pedal assist motors for specific commercial needs.*

*These bikes have the potential to tackle the environmental, logistics, traffic and social issues facing many European cities, all while providing a new perception of mobility, transport and quality of life.*

## Why use cargo bikes?

*The ease, affordability and accessibility of cargo bikes make them an increasingly popular choice for several groups, from families, SMEs, not-for-profits and international logistics companies. However, they are more than just a solution to urban logistics and mobility. They are at the forefront of a new bicycle culture, transforming public spaces, engaging the general public.*



*A Mayors Guide to cargo Bikes, Cycle Logistics 2019.*

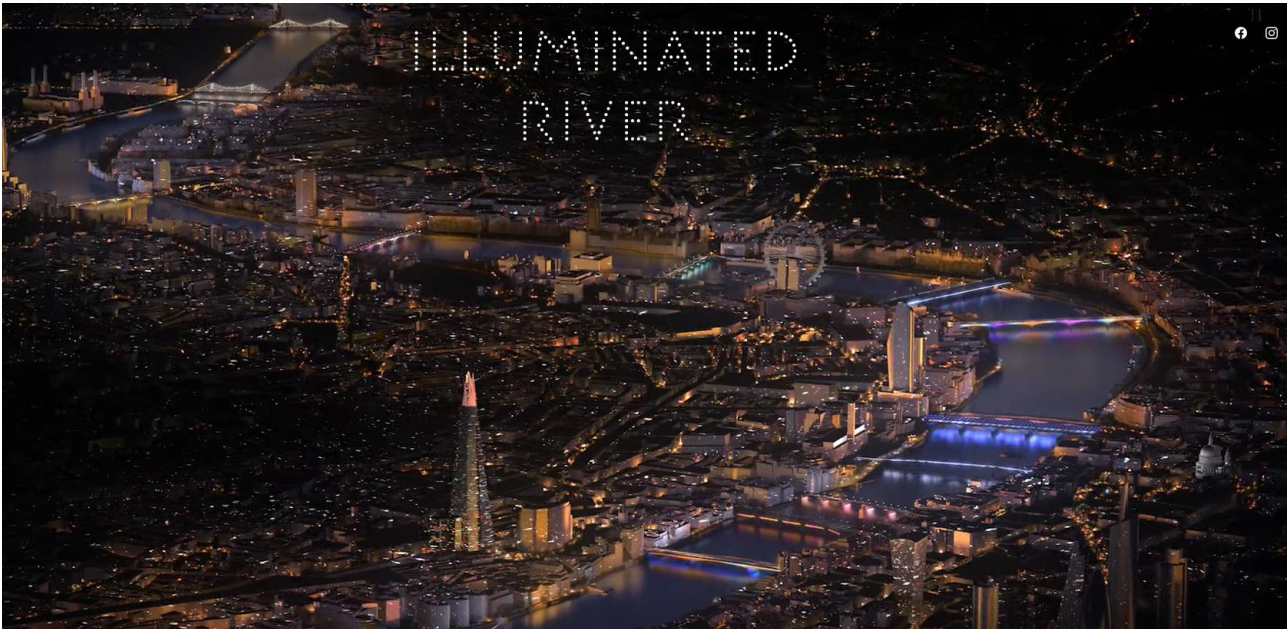
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## The Project

Illuminated River is an ambitious, new public art commission which will transform the capital at night, lighting up to 14 bridges on the River Thames. Once complete, it will be the longest public art project in the world, seen over 130 million times each year during its 10 year lifespan



## Opportunity

FM Conway will be undertaking Phase 2 of the works as part of the Illuminated River project

The bridges involved:

- Blackfriars,
- Waterloo,
- Golden Jubilee Footbridge,
- Westminster and
- Lambeth.

Proposal is to deliver materials by van.

## Health, safety and welfare risk assessment

The risks are calculated upon the definitions below:

Severity of Consequence (reasonable likelihood rather than greatest possibility)

1. property Damage
2. incident leading to slight shock
3. injury treatable on site
4. injury requiring hospitalisation
5. death

Likelihood

1. very unlikely to ever happen
2. remote possibility
3. possible
4. likely
5. regular occurrence

Multiplying severity by likelihood after control measures have been put in place should result in a score of no more than 12. To be reviewed: Following the ride or in the event of an incident not covered in this assessment.

Risk Assessment by Michael Barratt 01 March 2020. Competency of author and recognised qualifications:

London Cycle Design Standard  
ROSPA - Road Safety Engineering  
Police - Designing Out Crime qualified  
First Aid trained - TfL  
Ride Lead trained – LCC  
Physical Intervention trained - SIA

HAZARD	EFFECT/RISK TO WHOM	NO CONTROLS Severity Likel'd Result	MINIMISE RISK BY	RESIDUAL RISK Severity Likel'd Result
Other road user colliding with group	Ride lead/Rider(s), Ride Marshals, pedestrians	4 3 12	Having qualified and experienced accredited lead, undertaken First Aid a first aid kit, and all aware of incident procedure.	4 2 8
Riders colliding with other group members or falling off bike	Rider, other riders and marshals	3 3 9	<p>All measures listed above</p> <p>Ride lead looking at clothing to check it won't get caught in bike and that helmets, if worn, are correctly fitted.</p> <p>Ride lead observing bikes to be roadworthy and advising riders not to participate in the group ride.</p> <p>Ride lead checking to see if saddles are at a good height and assisting to adjust if needed.</p> <p>Ride lead observing riders at start and giving advice to any with poor control skills.</p> <p>Ride lead raising awareness of hazards on route; poor road conditions, bollards, other road users etc.</p> <p>Controlling speed to ensure that the group maintains manageable speed. Ride lead maintaining order</p>	3 2 6
Medical Emergency	All	5 2 10	<p>Having qualified ride lead, have undertaken First Aid &amp; have a first aid kit, and all aware of incident procedure.</p> <p>Ride lead carrying charged mobile phone and able to summon emergency services.</p> <p>Ride going at an inclusive pace. Having emergency contact details available for those who have registered.</p>	4 2 8

Contact with canals, rivers and ponding	Drowning, hypothermia exposure to harmful waste	5   5	Safety brief, cycle route maintained on cycle tracks away from water. Physical intervention protocol	5   5
Adverse Weather Conditions	Rider suffering sunburn / heatstroke / hypothermia if persistent wet rain	3   3	The ride is short and.  Ride lead to recommend dressing for weather and stops if required	3   3
Air Pollution	Asthma, lung cancer etc. caused by exposure to motor traffic exhausts	4   2 8	Route to primarily take routes with high motor traffic volumes adjacent to track with some quiet routes.  Exposure just on this ride is for a short time.	4   4
Abuse	Rider with member of public (sexual/physical) or allegation	4   4	Riders to be made aware of potential issues  Physical intervention if required	4   4

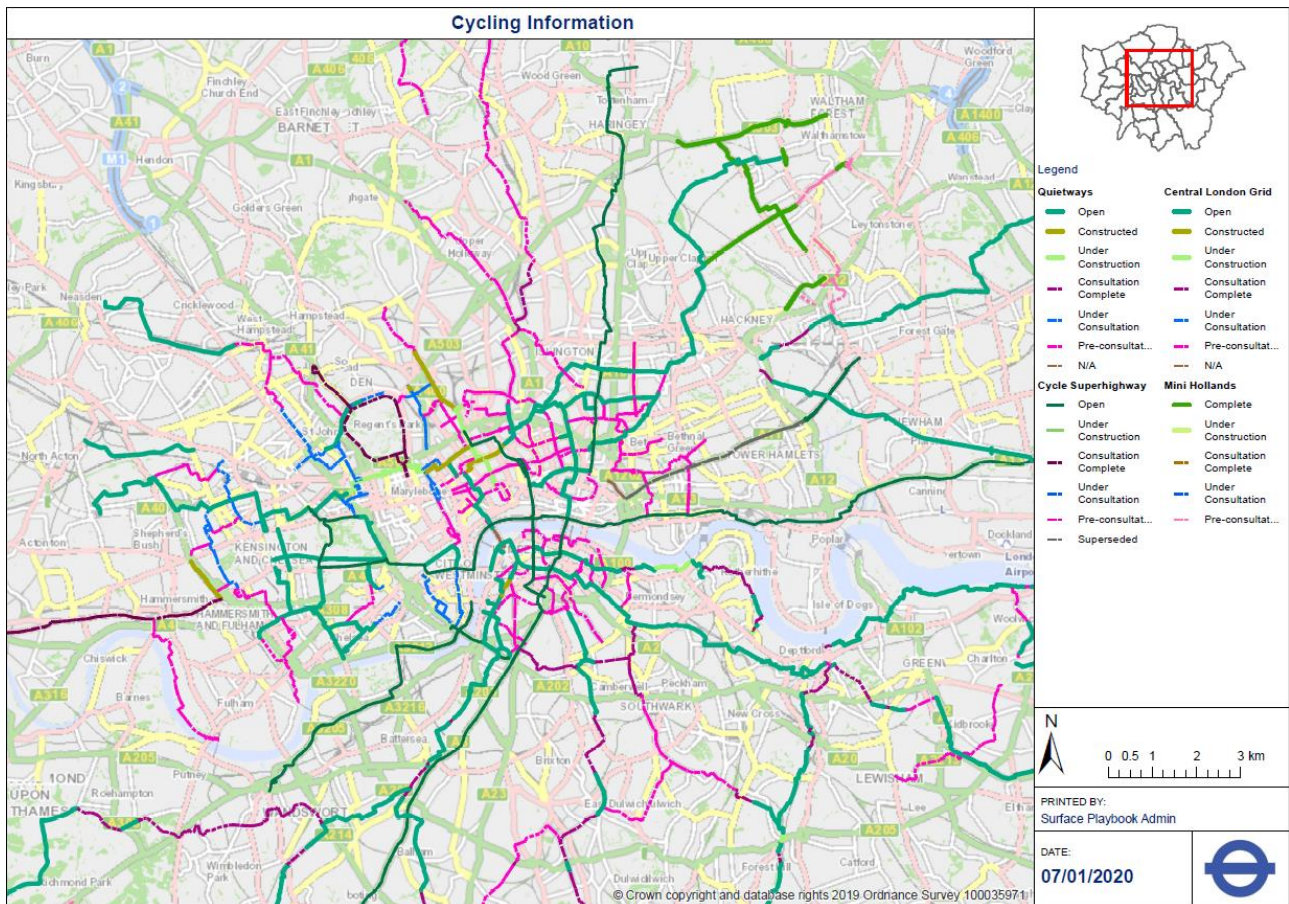
## Cyclists experience considered





## Desktop study

### Existing cycle network



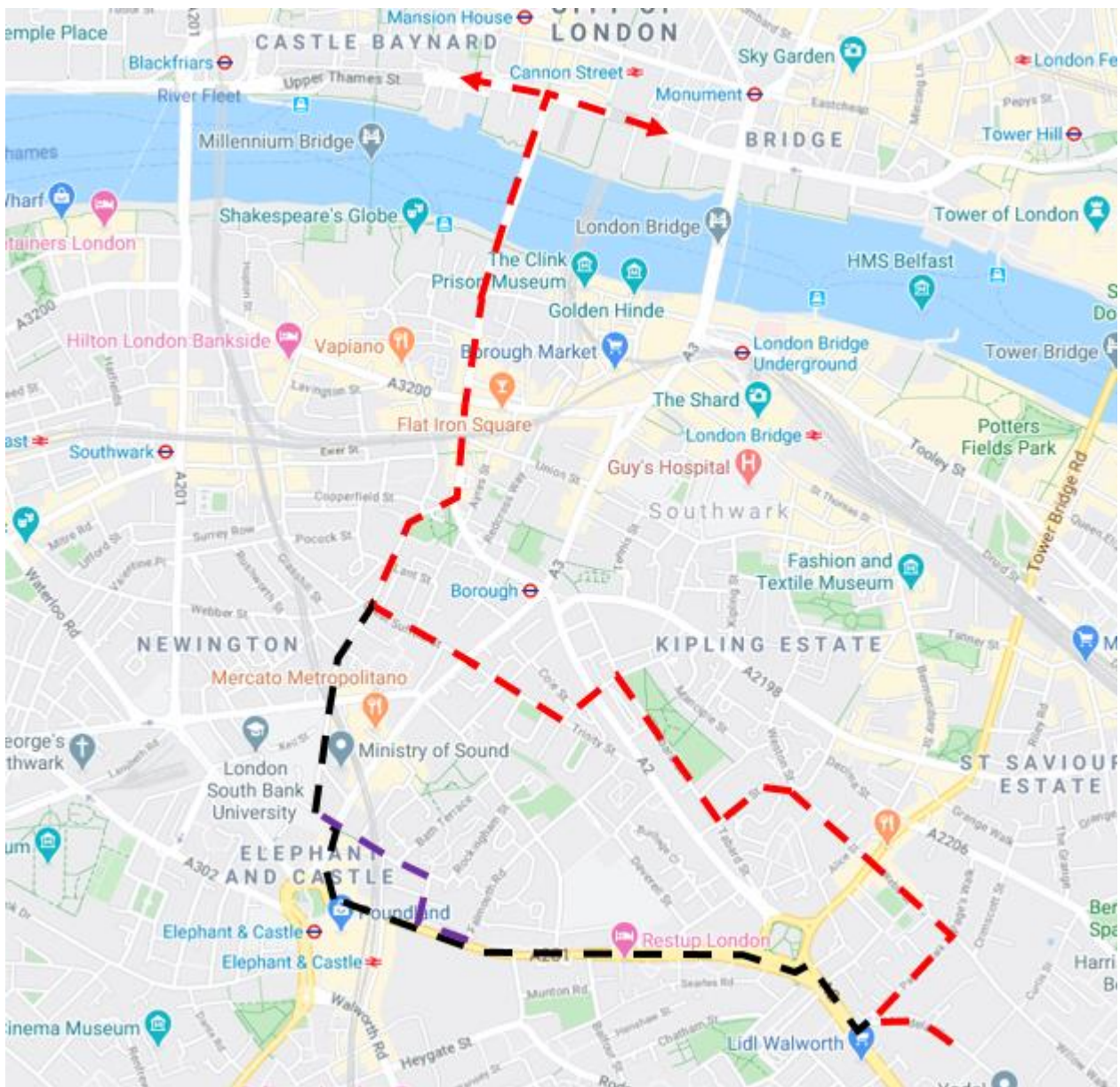
Desktop study includes identifying existing infrastructure to utilise as part of the route test and score on:

- Comfort and safety
- Efficiency of route




The trial ride will also utilise the desktop study to envisage any potential concerns raised.



## Routes Investigated



## Overview of the cycle route

Section photographs	observations	Concerns/mitigation
Black route		
<p>Mandela Way</p> 	<ul style="list-style-type: none"> <li>Commercial area</li> <li>Two-way street</li> <li>20 mph speed limit</li> <li>Vehicles parked both sides</li> </ul>	<ul style="list-style-type: none"> <li>Risk of car-dooring</li> <li>Low activity at night</li> <li>Slow speeds and good distance from parked cars</li> </ul>
<p>Old Kent Road</p> 	<ul style="list-style-type: none"> <li>Underpass</li> <li>Shared use footway</li> <li>Some good sections of width</li> </ul>	<ul style="list-style-type: none"> <li>Pedestrian conflicts</li> <li>Slow speeds and considerate cycling</li> <li>Alternative route</li> </ul>
	<ul style="list-style-type: none"> <li>Bus stop to negotiate</li> <li>One side road to negotiate</li> <li>Tall trees with low canopies which may darken area</li> </ul>	<ul style="list-style-type: none"> <li>Pedestrian conflicts</li> <li>Opportunity crime</li> <li>2 x rider teams</li> <li>Slow speeds and considerate cycling</li> <li>Awareness of surroundings</li> <li>Alternative route</li> </ul>



## Bricklayers Arms



- Toucan crossing facilities
- Low activity area
- Underbridge
- May have low light levels

- Pedestrian conflict
- Opportunity crime
- 2 x rider teams
- Slow speeds and considerate cycling
- Awareness of surroundings
- Alternative route

## New Kent Rd



- Bus lane entire length to E&C

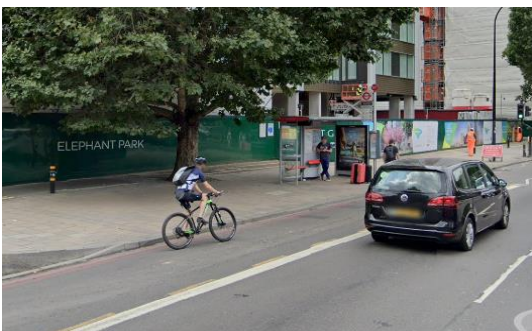
- Potential conflict with buses, taxis and m/cs



- There are numerous bus routes along this stretch of road

- Hold position in lane
- Monitor behaviours

- As above







- A small section of segregated two-way track back of footway

- Potential conflicts with pedestrians

- Monitor behaviours

## E&C Peninsula




- There is not a visible right turn into Newington Causeway from the peninsula. TBC

Purple route	Observations	Concerns/mitigation
<p>Alternative Route avoiding E&amp;C</p> 	<ul style="list-style-type: none"> <li>• Toucan crossing to cross road</li> <li>• Shared use footway</li> </ul>	<ul style="list-style-type: none"> <li>• Potential conflicts with pedestrians</li> <li>• Slow speeds on approach</li> </ul>
<p>Meadow Row (Q route link)</p> 	<ul style="list-style-type: none"> <li>• Quiet route</li> <li>• Some parking and access/egress to residential areas</li> </ul>	<ul style="list-style-type: none"> <li>• Risk of car-dooring</li> <li>• Low activity at night</li> <li>• Slow speeds and good distance from parked cars</li> </ul>
<p>Rockingham St</p> 	<ul style="list-style-type: none"> <li>• Good width</li> <li>• Quiet route</li> <li>• Parking both sides</li> </ul>	<ul style="list-style-type: none"> <li>• Potential speed issue</li> <li>• Monitor behaviours</li> </ul>
	<ul style="list-style-type: none"> <li>• Cycling priority area</li> <li>• Signal assistance to access Southwark Bridge Rd</li> </ul>	<ul style="list-style-type: none"> <li>• No major concerns</li> </ul>



Continuation	Observations	Concerns/mitigation
<p>Southwark Bridge Rd C7</p>   	<ul style="list-style-type: none"> <li>Protected cycle area to cross Newington Causeway</li> <li>New layout</li> <li>Good visibility of infrastructure</li> <li>Segregated for return trip</li> <li>Good visibility of infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Potential conflicts with buses</li> <li>Hold position in lane</li> <li>Monitor behaviours</li> <li>No major concerns</li> <li>No major concerns</li> </ul>

## Red route – utilising cycling infrastructure Q1 and C7

Section photographs	observations	Concerns/mitigation
<p>Mandela Way</p> 	<ul style="list-style-type: none"> <li>As above</li> </ul>	<ul style="list-style-type: none"> <li>As above</li> </ul>
<p>Page's Walk</p>  	<ul style="list-style-type: none"> <li>Access for cycles to enter Pages walk.</li> <li>Not clear on which side to use</li> <li>Park vehicles both sides of the road with capacity for one direction only and no safe passing</li> </ul>	<ul style="list-style-type: none"> <li>Potential conflict points with other cyclists/mopeds</li> <li>Slow speeds on approach</li> <li>Conflict with approaching vehicles</li> <li>Limited gaps to wait for passing vehicles</li> <li>Monitor evening flows and behaviours</li> </ul>
<p>Swan Mead</p> 	<ul style="list-style-type: none"> <li>Quiet route which may have manoeuvring vehicles to access/egress parking areas</li> </ul>	<ul style="list-style-type: none"> <li>May have darkening effect due to trees</li> <li>Lux level assessment</li> </ul>



Webb Street



Rothsay Street



- Safe segregated section to access Webb St

- Low vehicle flows
- Vehicle access/egress sections to be aware of

- Advisory route (not clear if contra flow)
- Development site shown TBC

- Segregated facilities to cross Tower Bridge Rd

- Quiet route with some parking

- Potential conflicts with rat running moped riders
- Monitor any issues

- Potential conflict with resident vehicles access/egress
- Slow speeds on approach

- Conflicts with approaching vehicles
- Monitor behaviours

- Potential pedestrian conflict on eastern side
- Slow speeds on approach

- Some pinch points to be aware of
- Hold position in lane
- Monitor behaviours





Law Street



Tabard Street



Pilgrimage Street



Trinity Street



- Small segregated track to access Law St

- Potential conflicts with rat running moped riders
- Monitor any issues

- Quiet route with some parking
- Some capacity for overtaking

- Potential conflicts with overtaking vehicles
- Monitor any issues

- Mixed traffic with some parking
- Capacity for overtaking

- As above

- One flow of traffic to negotiate (westbound)
- crossroads

- Potential conflicts with turning vehicles
- Slow speeds on approach

- Anti-moped deterrent is difficult to negotiate especially wider cycles

- May be difficult to manoeuvre
- Assess on initial trial



## Great Suffolk Street



- Mix of traffic types to negotiate
- Some restaurants and bars
- Parking both sides

- Slow speeds on approach

- As above

- As above

## Southwark Bridge Road C7





- Clearly marked cycle route along majority of road

- History of illegally parked vehicles in the cycle lanes
- Slow speeds on approach of hazard

- Bridge section has good segregation

- Potential conflict with load and HVM 1.2m max width
- Slow speeds on approach
- Limit load width

 <p>Upper Thames Street C3</p> 	<ul style="list-style-type: none"> <li>• Cycle gate to allow advanced position at lights</li> <li>• Main segregated cycle track</li> <li>• Segregated with high cycle flows during peak hours</li> </ul>	<ul style="list-style-type: none"> <li>• No major concerns</li> <li>• Conflicts with other cyclists</li> <li>• Hold position in lane</li> <li>• Monitor behaviours</li> </ul>
AOB	Additional mitigation	
<p>Risk of conflict; low-medium</p> <p>Some issues to consider during night time</p> <p>Undertake a review on completion of ride</p>	<p>Liaise with Met Police</p> <p>Rider training</p>	

# Attendees

Michael Barratt	TfL – Network Management
Adam Barnes	FM Conway
DP	Fully Charged





## Off-road test ride with load



Using the FMC yard, the bikes were loaded with sand 100kg and boxes of fixings 50kg. Two riders (TfL and FMC) put the bikes through their paces:

- Varying speeds
- Varying turns (sharp, gradual)
- Emergency stops and controlled braking
- Checking stability of bike with load



The bikes felt reasonably stable during the test. The Riese & Muller (Black bike) is at the top end of the market (high price) which showed during the test. The Urban Arrow is more of a workhorse.

### Riese & Muller

More stable out of the two bikes but also was carrying less weight. The enclosed front-loading area of the bike would be restrictive for specific loads.

### Urban Arrow

The box also made it restricted for load type and the 'Dutch Style' handlebars weren't the easiest to get along with.

**Suggestions** – flat bed type bike with flat handlebars



## On-road active route test with load



The routes included:

- Bus lanes
- Shared footways
- Quiet ways
- Cycle lanes
- Segregated cycle tracks

After a safety brief and route overview, we then got on the bikes to actively experience the set routes and other road user behaviours. Personal experiences were discussed at the end of the ride.

The electric assist made the ride comfortable and the rider was able to keep with traffic. Using shared paths and toucan crossings wasn't easy due to the size of the bikes. There was a nice variety of routes to experience and once on C7 and C3 very comfortable to cycle.

The bikes both handled well on the road. The Urban Arrow battery died on the return trip and made the ride more energetic.

### Suggestions

- Monitor battery charge carefully
- Carry a spare battery



### Next steps

- FMC to trial an appropriate cargo bike rider training session
- Undertake a site ride and to investigate loading area mitigation for cycling integration at each bridge (Santander Cycles can be utilised)
- Consider method for the scheme
- Procurement – utilise any grants available.

## Feedback



### Adam Barnes FM Conway

*"As a cyclist with average experience, I was initially a little bit hesitant to ride the cargo bike. With the prospect of having a delivery load added to the bike this only heightened my nervousness around the planned ride. However, any concerns I may have had were quickly reassured. As soon as I got on the bike to do some practice laps of our yard in Southwark, I quickly realised the ease of riding with the use of the electric assist motor on the bike. As to be expected, you must be aware of the slightly larger frame of the bike, but the handling and engineering of the bike make the bike very user friendly."*

*The ride itself really demonstrated the flexibility and capability of the bikes in terms of being used for general logistics within the construction industry. With the use of TfL's cycle highways and local quiet way route before we even knew it we had arrived at our first destination, Blackfriars Bridge. The ride was very easy, it felt comfortable and safe even when encountering some unforeseen highway works on the route.*

*Being on the ride has really given me a better perspective for the use of cargo bikes from both the view of the rider and the operational potential within the industry. I am now more motivated than ever to incorporate their use into our site logistics model within central London and further investigate their use in site operations in other areas of the business."*

### TfL

*We are widely promoting the use of cargo bikes in construction and it is great that FM Conway have taken a positive approach to better understanding its uses.*

*It is hoped that we can utilise cargo bikes in the Illuminated River project and use as a catalyst for business logistics mode change going forward.*

### Special thanks

*We would also like to thank Fully Charged, London Bridge for supplying their cargo bikes for use in the trials.*

## Contact

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