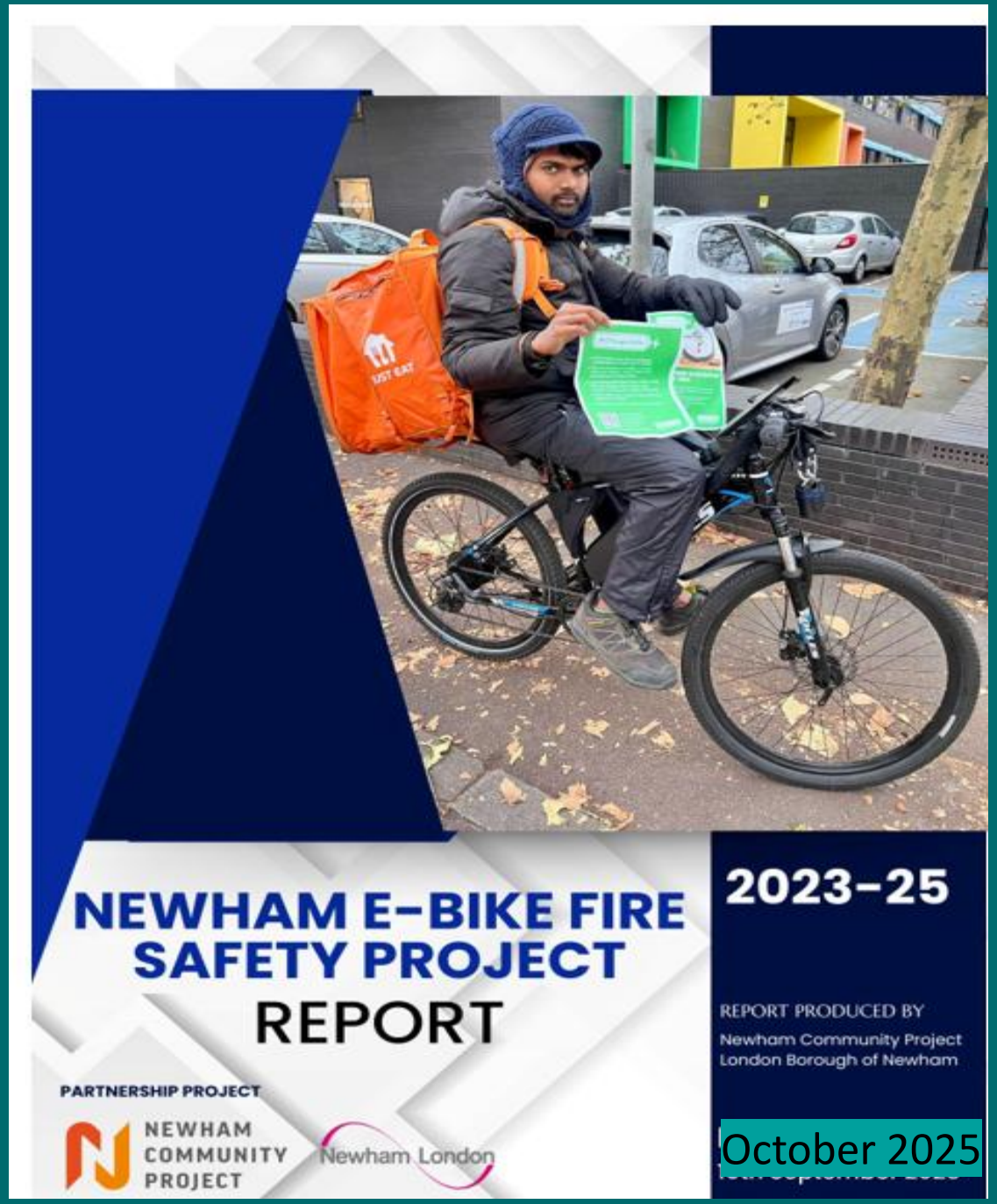
Key findings from joint E-Bike Battery Fire Safety Project



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Agenda: E-bike battery fire safety

- **2.00-2.05pm Brief welcome**- (Zulfiqar Mulak (Director of Housing Needs LB Newham)
- **2.05-2.10pm LFB perspective on increase in fire incidents from e-bikes/e-scooters** James Ryan (LFB Borough Commander Newham)
- **2.10-2.30pm -Overview of project/legal definitions/ key research data and recent legislation update-**
  Helen Masterson (Head of Private Sector Housing Standards, LB Newham)
- **2.30-2.45pm Newham Community Project engagement, ambassadors & key outcomes** (Rozina Iqbal (Director of Operations NCP)
  2.45-3pm Courier/Ambassador perspective of project
- **3.00-3.10pm- main report recommendations-** Helen Masterson
- **3.10-2.30pm**- **Presenters panel for audience questions**

Networking and closedown by 4pm

2022 E-bike fire incident in Newham- Emergency planning response limitations

10 international students impacted/hospitalised by e-bike left charging on the hallway

Council – legally restricted to minimal assistance

Start of collaboration with Newham Community Project and local charities to assist.

£10k fine for rent-to-rent landlord

Newham Case Study 1: In October 2022, four fire engines attended in the early hours to a fire in Manor Park E12 where ten international students were living in a ten bedroom two-storey end-of-terrace house with a loft conversion, converted into a House in Multiple Occupation (HMO) and shared communal areas. Fire originated around an electric bike in the communal stairs area. Residents smelt burning and the smoke built up in the hallway which blocked the front exit. Seven residents escaped by kicking out windows and Two residents were rescued from the bay window canopy by firefighters using a ladder. This resulted in four adult males injured, three hospitalised due to smoke inhalation and escape injuries. Ten residents required rehousing. A four-gang extension lead and charger transformer were found and sampled and although hard-wired smoke detectors were installed, some had been removed from bedrooms.-LFB incident report October 2022

Background to project

40k rented properties to be licensed in Newham

Couriers/International students **linked to unlicensed HMOs.**

Overcrowded properties and **strain on the older property electrics.**

Six times more likely to die in a HMO fire compared to one household property

LFB #ChargeSafe project campaign on fire safety for e-bike battery charging

Small grant funding **to train up ambassadors to engage with their peers at a grass roots level.**

E-Bike and E-Scooter Comparison (legal status applies when ridden on the public highway)

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Comparison Table

Criteria	E-Bike (includes EAPC compliant DIY conversions)	E-Scooter (Rental schemes)	Converted non- EAPC compliant E-Bike
Legal Status (UK)	Legal if meets EAPC rules when purchased or converted and used on the public highway	Legal only if in a rental scheme and used on the public highway.	Illegal if not EAPC compliant (for speed limits, power & pedal assist) & ride on the public highway
Speed Limit	15.5 mph (25 km/h)	15.5 mph (25 km/h)	Often exceeds legal limits (20–30+ mph)
Motor Power Limit	250W max	250W max	Often exceeds 250W (500W–1000W or more)
Pedal Requirement	Must be pedal & chain assisted	No pedals	Often throttle-only, no pedal assistance
Insurance / Registration	Not required	Required for rental schemes	Not possible due to illegal status
Helmet Requirement	Not legally required (recommended)	Not legally required (recommended)	Not legally required, but high risk
Road Use	Allowed on roads and cycle paths	Rental scooters allowed on roads	Illegal on public roads and cycle paths
Safety Standards	Must meet EAPC standards	Must meet rental scheme standards	No safety oversight; risk of fire and brake failure
Cost Range	£800–£3,000+	£300–£800	£200–£600 + base bike
Environmental Impact	Low emissions, sustainable	Low emissions, sustainable	Same, but less efficient or safe
Enforcement Risk	Low if compliant	Medium	High risk of fines, seizure, or prosecution

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EAPC compliant e-bike example

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Meets (EAPC) Electrically Assisted Pedal Cycles DVLA guidelines:

- E-bikes must **not exceed 25 kilometres** or **15.5 miles** per hour
- The battery output **must not exceed 250 watts of power**
- Must be **pedal assisted** (propel with a chain mechanism)

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Seized Fake e-bike non-EAPC compliant DIY example

Seized fake e-bike by Metro cycle Cops (social media post)
1000 Watt motor + No chain + Exceeds 15.5mph!
Pushbike brakes not designed to stop the bike at speed
Classified as a motorbike- without insurance risk 6 points on driving licence penalty

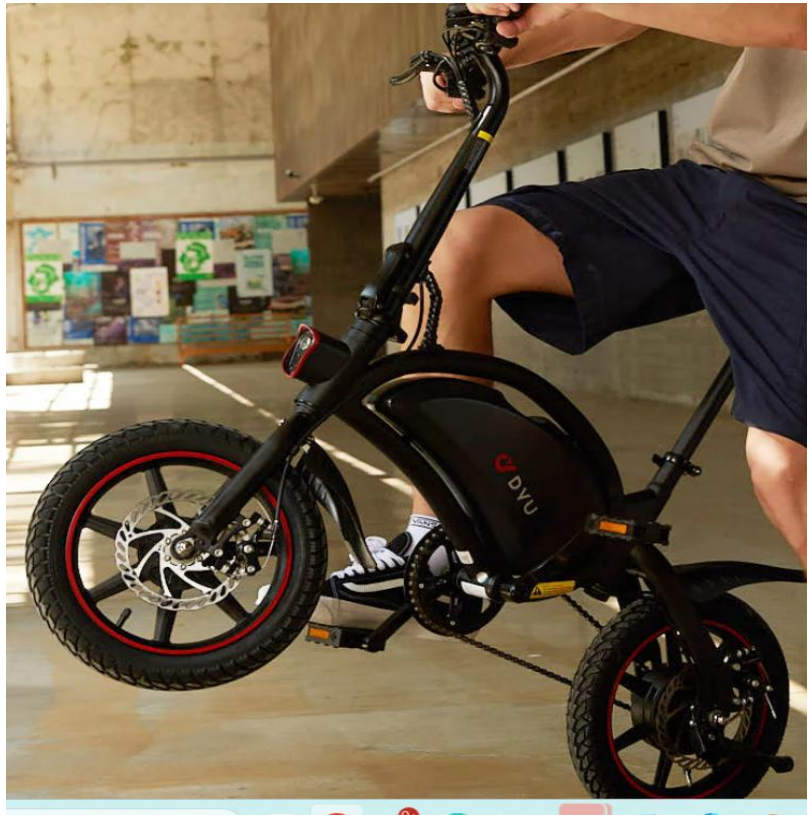
Example of non EAPC sold as E-bike online

Exceeds 250Watt

31mph Maximum Speed (adjusted to country maximum)

Sold online as legal to use off-road to avoid non-EAPC

Legal EAPC/conversion kit examples…



However- these are compliant EAPCs with 250watt motors!! DYU, which offers fully certified models designed to comply with UK regulations.

E-Scooter

E-SCOOTER
(LEGAL)

- Convenient for short urban trips
- Easy to use and park
- Low cost for occasional use
- Environmentally friendly

- Illegal on public roads
- No insurance or registration posssible
- High risk of enforcement action (fines, seizure)

Currently, in the UK only e-scooters participating in official rental e-scooter trials may be used legally on roads (none in LB Newham) .

Other e-scooters are classed as Powered Transporters and cannot be used legally on the road.

If you use an e-scooter illegally, you could face a fine and penalty points on your licence, and the e-scooter could be impounded.

E-Scooter Usage and Safety Statistics in the UK

This briefing summarises key statistics related to e-scooter usage, safety incidents, and regulatory concerns in the UK, based on data from government and safety organisations.

E-Scooter Statistic	Details
Lawful Use	Only rental e-scooters from approved schemes are legal on public roads.
Rental E-Scooters (2021)	23,000 rental e-scooters operated in 31 trial areas across England.
Private E-Scooter Imports	Estimated 1 million private e-scooters imported into the UK (2018–2022).
Fatalities (2022–2023)	18 deaths caused by private e-scooter use.
Collisions (2022)	1,402 collisions involving e-scooters, up from 1,352 in 2021.
Single Vehicle Collisions (2022)	341 collisions involved only one e-scooter.
Casualties (2021)	Nearly 900 casualties from e-scooter collisions.
Gender Distribution	71% of casualties were male, 29% female.
E-Scooter Fires (2023)	19 fires in London caused by e-scooters.

Table Data sources:

E-bike Statistic / Issue (source)	Key Details
Fastest-Growing Fire Risk	LFB identifies e-bike battery fires as London's fastest-growing fire risk (2024).
East London Fires (2023)	56 e-bike-related fires occurred in East London (LFB internal data).
National Fire Reports (2024)	211 fires involving e-bikes or e-scooters reported by fire services; 170 involved e-bikes.
Post-Market Conversions (International Fire Safety Journal:	45% of e-bike fires (77 incidents) involved DIY retrofit kits added to standard pedal bicycles.
Unknown Build Fires	59 fire incidents involved e-bikes of unknown build.
Manufactured E-Bike Fires	34 fire reports cited manufactured e-bikes.
Other Vehicle Fires	39 e-scooter fires, 1 e-unicycle fire, and 1 mobility scooter fire reported.
Conversion Kit Risks	Incompatibility, faulty products, and unsafe modifications increase fire risk.
LFB Fire Response (2023)	143 e-bike fires and 36 e-scooter fires attended; 3 deaths and ~60 injuries reported.
2024 Fire Count (Sept 2024)	131 e-bike and e-scooter fires reported by end of September 2024.
Cause of Fires	Many incidents caused by incompatible chargers or unsafe products bought online.
Regulatory Gaps	LFB highlights inadequate regulation for e-bike kits and accessories sold online.
Legislative Support (December 2024)	Mayors London Assembly and LFB supports new legislation for better regulation and safeguards on online marketplaces.
Conversion Kit Concerns	Kits allow personal or provider-based modifications, posing fire safety risks.
Lithium-Ion Battery Fires	Fires linked to lithium-ion batteries increased 46% from 2022 to 2023; e-bikes caused nearly a third.

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E-bike stats 2023-25

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LBN Trading Standards project (Dec 2024)

OPSS **Statutory guidance in 2024-** specifically addressing lithium-ion battery safety.

Best practices for manufacturers, importers, and distributors, including robust battery management systems, safe charging protocols, and clear product labelling.

While not legislation itself, this guidance carries legal weight under the GPSR and is used to assess compliance

Examples of seized defective e-bike/e-scooter battery chargers

Chargers found to pose risks of electric shock, fire, and even explosion.

Counterfeit plugs and fuses discovered not complying with UK safety standards.

Lack of Critical Safety Information
Packaging lacked key details like the UK importer, power consumption, and necessary safety symbols.

Missing instruction manuals left users in the dark on essential safety warnings and usage information.

Non compliant kits seized by Trading Standards

Soldering raised concerns about potential lead content, requiring further investigation.
Non-Compliant and Counterfeit Components: Counterfeit plugs and fuses discovered, increasing the risk of fire or explosion.
Cables lacked proper European approval markings, requiring additional checks.

Substandard Build Quality: Exposed wiring in some chargers creating serious electric shock risks.

Transformers failed key safety tests for creepage and clearance, putting consumers at risk of fire and shock.

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Thermal runaway fire dangers

OPSS Testing concluded that it was "**very hard to induce a legitimate product to enter thermal runaway.**"

However at the 'bottom end' of the unregulated products available online: "**they would go up very quickly. You would connect the wrong charger, for example, and it would, over a short space of time, cause a problem in the battery management system that would heat up, that will then cause a further problem down the line, and** that's when you get severe thermal runaway."

Thermal Runaway: Causes & Reactions

Cause	Description
Electrical	Overcharging
Climate	Cold
Thermal	Moisture
Physical	Crush
Physical	Penetration
Fault	Malfunction
Fault	Short Circuit
— Reaction —	
Reaction	Smoke (battery emitting smoke) Explosion (battery bursting) Fire (battery on fire)

Police Action

3. Police Seizures Reflect Crisis

According to *ITV News*, UK police seized **937 illegal e-bikes** in one year. Some bikes, capable of **70 mph**, weigh over 50 kg and are likened to “death traps.” One City of London seizure involved a bike displaying **6,000 miles of usage.**

London Fire Brigade’s Warning

The LFB warns of “e-bikes and e-scooters as the fastest growing fire trend” Fires often ignite within seconds (“thermal runaway”)—like the notorious incident at Sutton station, where a bike erupted into flames in under six seconds.

Real Lives, Real Consequences

Tragic losses include the deaths of Sofia Duarte and others due to conversion-kit and battery fires—often in high-rise homes where escape routes were blocked.

MPs are calling on Amazon and eBay to tighten controls on the sale of e-bikes and e-battery chargers-June 2025

- Where e-bikes listed **exceed legal power or speed limits.**
- **Found similar Chinese brand** being sold that UK Office for Product Safety and Standards (OPSS)- **previously prohibited** posing a serious fire risk because of substandard electrical components and charging equipment.
- MPs called on Amazon and eBay **to withdraw the bikes from sale, overhaul seller and product verification processes to prevent the listing of dangerous or illegal items; and endorse a national quality-assurance Kitemark to distinguish legal and fire-tested e-bikes.**
- The spokesperson added: “Safety is a top priority at Amazon and we have partnered with the London Fire Brigade **to provide customers with easy-to-understand expert tips on how to use and store e-bikes and e-scooters safely**.”
- After being contacted by the Guardian, eBay said it had removed “a number of listings” for e-bikes flagged by the OPSS and was “**working on identifying and removing any further items as quickly as possible”**

Key legislation change

Product Regulation and Metrology Act (2025). (PRAM25) (RA Jul 25)

UK broad powers to address emerging product safety risks, (including lithium-ion batteries in e-bikes and e-scooters)

- **Mandatory safety standards, such as thermal runaway prevention mechanisms, and strengthens enforcement against unsafe products sold online.**
- Holds **online marketplaces accountable** for ensuring the safety of products they facilitate, marking a significant shift in regulatory oversight.

General Product Safety Regulations (GPSR) 2005,

All UK consumer products to be safe including e-bike batteries & conversion kits)

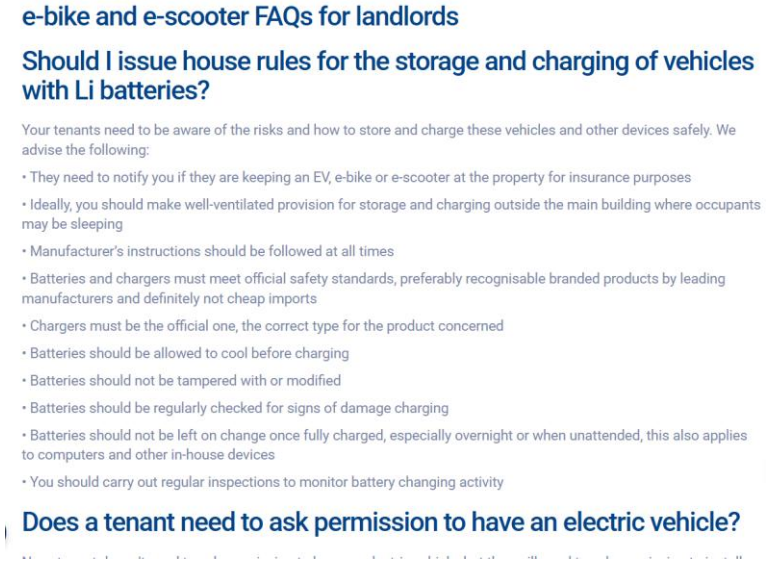
product recalls, bans, & criminal prosecution to enforce safety standards.

Residential Guidance

the **London Fire Brigade's GN103 Guidance Note**, which provides practical advice on the safe use and storage of e-bikes and e-scooters. Campaigns like Electrical Safety First's Battery Breakdown have also played a role in raising awareness and pushing for stronger regulations, influencing the development of the 2025 Act. [E-bike and e-scooters - guidance for responsible persons | London Fire Brigade]

Guidance for Landlords

In July 2024 Total Landlord insurance worked with London Fire Brigade and published a good practice advice guide for landlords who have tenants storing and charging e-bikes/e-scooters. Below is an example of their guidance note giving practical tips based on the LFB #ChargeSafe. Full advice details are available at: [Total Insurance Landlord & Tenant Guide]



e-bike and e-scooter FAQs for landlords

Should I issue house rules for the storage and charging of vehicles with Li batteries?

Your tenants need to be aware of the risks and how to store and charge these vehicles and other devices safely. We advise the following:

- They need to notify you if they are keeping an EV, e-bike or e-scooter at the property for insurance purposes
- Ideally, you should make well-ventilated provision for storage and charging outside the main building where occupants may be sleeping
- Manufacturer's instructions should be followed at all times
- Batteries and chargers must meet official safety standards, preferably recognisable branded products by leading manufacturers and definitely not cheap imports
- Chargers must be the official one, the correct type for the product concerned
- Batteries should be allowed to cool before charging
- Batteries should not be tampered with or modified
- Batteries should be regularly checked for signs of damage charging
- Batteries should not be left on change once fully charged, especially overnight or when unattended, this also applies to computers and other in-house devices
- You should carry out regular inspections to monitor battery changing activity

Does a tenant need to ask permission to have an electric vehicle?

Good practice example: Greater Manchester Food Delivery Charter to Improve Road Safety

GREATER MANCHESTER
DOING THINGS DIFFERENTLY

First dedicated set of safety standards for bike-based food couriers,**(EAPCs)**.

Reduce road incidents and **promote legal, responsible** riding across the region

460k people working in the UK gig economy, a **18% involved in food delivery** (**~ 82k**)

Recognises **vital role couriers play** in supporting the hospitality sector, enabling fast, reliable delivery of meals, groceries, and retail items.

Nine core H&S principles in 5 key areas in table below)

Aligned with TfL's **Meal and Grocery Delivery Company Motorcycle Road Safety Charter (2023)**. GMCA will continue to engage with central government to advocate for national safety standards in food delivery.

Charter Focus Areas from Greater Manchester Food Delivery Charter

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Charter commitment	Charter Key Points
1. Bike Safety and Compliance	- Company-owned/leased bikes must be legally compliant and roadworthy. - Couriers using personal bikes (EAPCs/e-bikes) receive support and guidance. - Non-compliance may lead to enforcement by GMP. - Insurance is recommended though not mandatory. - Cycle training is offered.
2. Delivery Practices	- Delivery schedules must be realistic and not encourage unsafe riding. - Couriers are encouraged to report injury-related collisions to police.
3. Fire Safety	- Modified battery e-bikes/EAPCs fire safety advice given. Not to be charged or stored in Cycle Hub facilities due to fire risk.
4. Substitute Courier Compliance	- Substitute couriers must comply with Home Office rules. - Platforms conduct periodic checks to ensure compliance.
5. Vision Zero Support	- Supports Greater Manchester's Vision Zero goal to eliminate serious road injuries by 2040. - Data reviewed during Days of Action to reduce collisions and identify hotspots.

Market trends prediction: £14billion in 2025 and projected to be £63 billion by 2029 for food delivery platforms

APPG: The Threat of Illegal E-Bikes (June 2025)

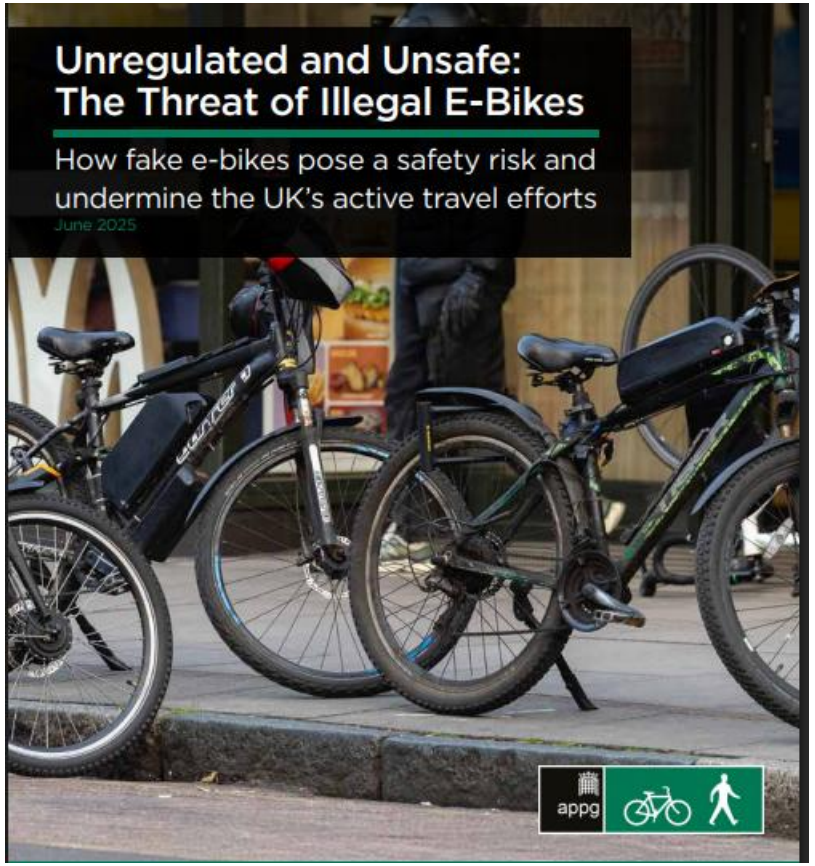
Newham London

1. MPs Expose Illegal High-Speed Kits

A cross-party parliamentary group (APPGCW) uncovered that online conversions—often sold via Amazon, eBay, and other marketplaces—enable bikes to hit **speeds of 40 mph to 70 mph**, with power outputs sometimes reaching **2,000 Watts**, alongside **uncontrolled throttle systems**. These modifications violate UK law, which restricts pedal-assisted e-bikes to 250 W and 15.5 mph speeds.

2. Dangerous Batteries Fuel Fire Surge

MPs and fire safety groups warn these kits frequently **come with batteries and chargers that bypass UK safety standards, sparking a dramatic rise in fire incidents.** London Fire Brigade (LFB) reports show a surge in fire cases—rising from **8 in 2019 to 179 in 2023**—many tied to dubious conversions.



APPG Recommendations

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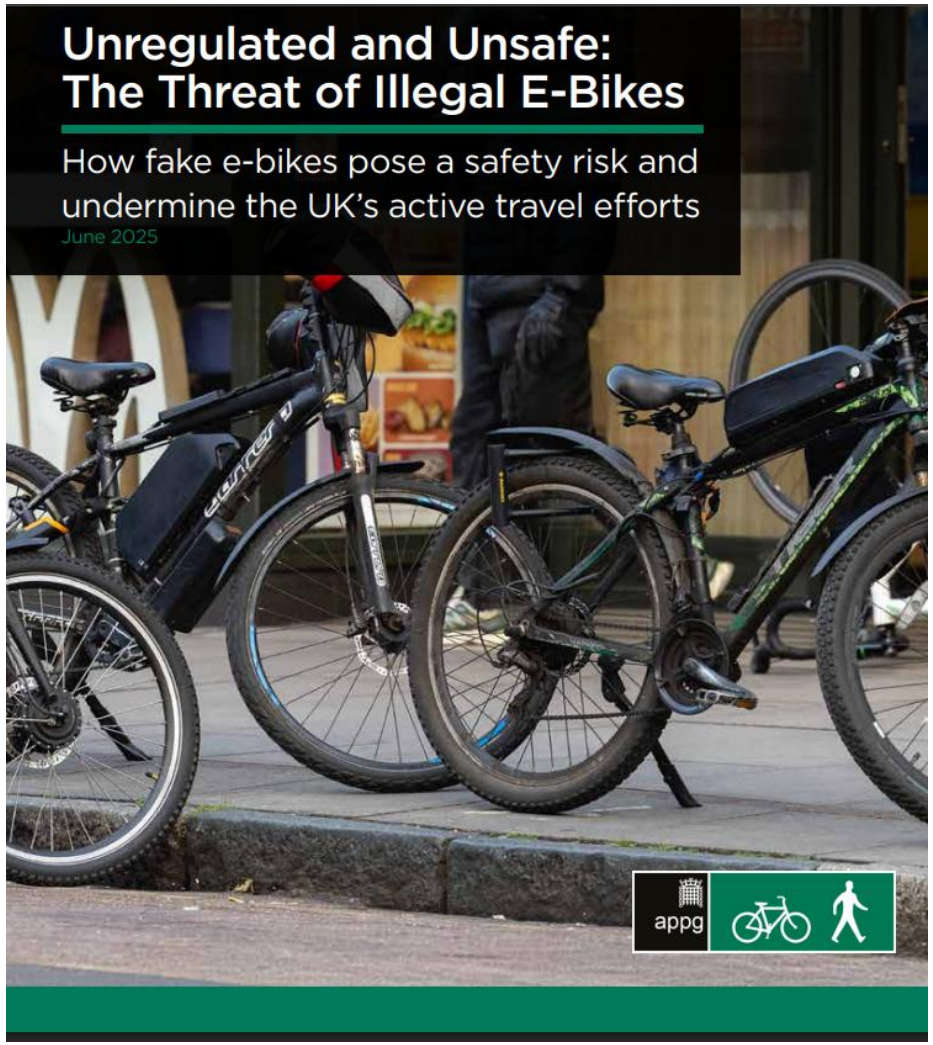
Executive Summary

Seven Key Recommendations to Improve E-Bike Safety and Regulation

Recommendation	Summary
1. Withdraw Unsafe Products from Sale	Remove uncertified or overpowered e-bike kits, batteries, and chargers. Use legislation to enforce seller verification, product safety, and liability for unsafe listings.
2. Fix Gig Economy Loopholes	End substitution practices and reintroduce 'worker' status for riders to ensure fair pay and safety rights. Mandate pay structures that discourage risky riding.
3. End the Road-Legal Loophole	Ban high-powered e-bikes marketed for off-road use without legal justification. Fast-track regulation for safe, certified e-scooters.
4. Lift E-Bike Bans Through Certification	Create a government-backed kitemark for safe, fire-tested e-bikes. Accelerate adoption of PAS 7250 safety standards for batteries and conversion kits.
5. Empower Police for Enforcement	Grant police powers to seize unsafe e-bikes. Improve collision data collection and increase resources for DVSA and Trading Standards.
6. Enforce Delivery Platform Compliance	Require platforms to run real-time compliance checks and verify bike safety using GPS and geotagged photos.
7. Fund a National Scrappage Scheme	Launch a scheme to remove dangerous bikes and batteries, funded by delivery companies.



London Councils

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Key Issues

· Illegally modified e-bikes pose significant fire and road safety risks

· Lack of consumer awareness and retailer responsibility regarding legal compliance

· Dockless e-bikes obstruct public spaces and pedestrian pathways

· Fragmented regulatory framework across boroughs hinders enforcement

· Gig economy riders are often incentivised to use unsafe modifications

· Delivery platforms classify riders as self-employed, avoiding safety obligations

· Enforcement is costly and often outside the council's remit

· In 2023, London recorded 143 e-bike fires, resulting in 3 deaths and 60 injuries.

Proposed Solutions

· Mandatory cigarette-style warning labels on illegal e-bikes

· Stricter regulations require retailers to inform buyers of the legal status and intended use

· Enhanced police powers to seize non-compliant e-bikes and address anti-social behaviour

· Licensing and regulation of the e-bike hire industry by TfL and local authorities

· Unified London-wide regulatory approach

· Government-backed 'Help to Buy' scheme for legal e-bikes

· Inclusion of self-employed riders in the Cycle to Work scheme

· Clearer enforcement of motor vehicle classification for non-compliant e-bikes

Recommendations and Next Steps

- **Adopt national legislation** to incorporate the key recommendations summarised in Table 12 from the APPGCW report *Unregulated and Unsafe: The Threat of Illegal E-Bikes*, addressing illegal modifications, unsafe batteries, and gaps in enforcement.
- **Develop a Greater Manchester–style Charter** for food-delivery riders, led by the **Mayor of London** and supported by major delivery platforms, requiring greater responsibility for rider safety and vehicle compliance while incentivising the use of pre-approved, safe e-bike models.
- **Strengthen the legislative framework** by introducing tighter quality controls, stronger consumer protections, and clearer enforcement powers. London boroughs should lead this call, supported by other regions such as Greater Manchester.
- **Introduce a government-backed "Help to Buy" scheme** for legal e-bikes and expand the Cycle to Work scheme to include self-employed riders, making safe, compliant equipment more accessible.
- **Require delivery platforms** to promote LFB #ChargeSafe messaging alongside company e-bike instructional materials and use geotagging or in-app verification to exclude riders using non-compliant or modified bikes, ensuring fairness for compliant riders.

Project Recommendations Part 2

- **Scale the Newham Community Project model nationally:** apply its **place-based, ambassador-led approach** to train local community ambassadors who can deliver safety awareness and rider engagement within their own neighbourhoods. This should be combined with the use of **LFB #ChargeSafe materials** to share consistent safety messages with riders, residents, and international students (and their dependants).
- **Commission a detailed adaptation framework:** the **Mayor of London** and the **Greater London Authority (GLA)** should fund Newham Community Project to produce a structured implementation guide demonstrating how this model can be replicated across other London boroughs and scaled nationwide, ensuring consistency, community participation, and measurable impact.
- **Adopt the toolkit locally:** local authorities and partner organisations should use this best-practice approach to train community ambassadors to raise safety awareness among couriers, international students and dependants, and other target groups.
- **Improve official statistics:** ensure national road-collision data distinguishes between standard bicycles and e-bikes, clearly recording whether e-bikes have been illegally modified.
- **Continue LFB data-sharing:** the **London Fire Brigade** should maintain regular data exchange with local authorities on e-bike and e-scooter fire trends through the #ChargeSafe campaign.

Project Recommendations Part 3

- **Embed within Fire Risk Assessments (FRAs):** FRAs should explicitly consider the risks from e-bike storage, reference APPGCW research findings, and make recommendations aligned with LFB Guidance Note GN103.
- **Run coordinated social-media campaigns** highlighting delivery companies' social responsibility and supporting relevant policy reforms.
- **Encourage delivery-company sponsorship** of "Dr Bike" e-bike safety sessions, in partnership with local police and Trading Standards. Sponsorship could help fund Trading Standards electrical-testing kits and pop-up battery-testing advice points.
- **Support safe battery-exchange schemes:** encourage delivery platforms to provide discounts or assistance for riders to replace unsafe or damaged batteries with certified alternatives.
- **Strengthen enforcement** with police and Trading Standards to identify and remove from the public highway any modified or "fake" e-bikes that fail to meet EAPC guidelines or lack required insurance, registration, or safety compliance.
- **Coordinate action on illegal e-scooters:** police and local authorities should continue awareness and enforcement operations to remove privately owned e-scooters used unlawfully on public roads, except where authorised rental trials are in place.