

Department for Transport Consultation

Smarter regulation: proposed changes to legislation for electrically assisted pedal cycles

Response from the Parliamentary Advisory Council for Transport Safety (PACTS)

Submitted on 22nd April 2024

About PACTS

The Parliamentary Advisory Council for Transport Safety (PACTS) was formed in 1982 by parliamentarians and experts from a range of disciplines who had amended what became the Transport Act 1981 to make seat belt wearing compulsory.

Today, PACTS is the only NGO which:

- addresses transport safety (road, rail and air) across the UK;
- focuses on parliament, government and key stakeholders;
- has a wide membership base across the modes and the public, private and third sectors;
- has no commercial or sectional interests.

PACTS is a founder member of the European Transport Safety Council (ETSC) and continues to be one of its most active members. It also provides the secretariat to the All-Party Parliamentary Group for Transport Safety. More details about PACTS can be found on our website [here](#).

Thank you for giving us the opportunity to respond to this consultation. For further information regarding this response please contact Kumar Niketan, Advocacy Officer, PACTS at kumar.niketan@pacts.org.uk

Overview of PACTS consultation response

PACTS is well aware that mobility choice is changing with technological development, as well as incentives from different policy areas. Small, lightweight, zero-emissions vehicles are being used more extensively than they were five years ago. For example, e-scooters have proven to be popular.¹ Simultaneously, active travel is being promoted.

Electrically assisted pedal cycles (EAPCs) are a well-established form of transport which provide a means for riders, and wider society, to benefit. This is especially so when there is a mode shift from larger, faster and therefore more dangerous modes.

The need to reduce carbon emissions from the transport sector means a shift to electric power. This includes the redesign of what are referred to as L-category vehicles - powered two-wheelers which, when compared with EAPCs, have a higher power and are solely mechanically propelled. They are classed as motor vehicles, which places obligations on the rider. They are disproportionately represented in casualty figures both for riders as well as other road users.^{2,3}

L-category vehicles already include a range of different forms, including a powered-bike. It may be possible that, in a few cases, simply changing electric power will not require a category or sub-category to be refined. However, PACTS considers that the proposals made in this consultation are not the appropriate route to make changes to the well-established and widely used EAPC.

PACTS recommends that the Government proceeds with earlier proposals presented by Transport Minister Baroness Vere, in May 2022, and creates a new low-speed zero-emissions vehicle category. That more considered approach would enable appropriate regulations to be drawn up for the manufacture and use of a range of new vehicles. These may include those which are purely electric powered and low speed, possibly, but not limited, to the form of a pedal cycle providing means for able and less-abled people to travel with or without cargo.

In light of this PACTS objects to the proposed changes.

¹ Technology Tracker: Wave 9 Report prepared for the Department for Transport November 2022 [lpsos report \(publishing.service.gov.uk\)](https://publishing.service.gov.uk).

² 200230718 [MCIA letter to Secretary of State Mark Harper Urging Government to Implement Essential Changes for Improved Motorcycle Training | MCIA](#) - Nationally, in 2021 motorcycles comprised under one per cent of traffic but accounted for 20 per cent of people Killed or Seriously Injured (KSI), and 20 per cent of those killed

³ [Reported road casualties Great Britain: road user risk, 2022 data - GOV.UK \(www.gov.uk\)](#) – Chart 5

Question 1

Do you support or oppose the proposed change to how EAPCs are classified so that the maximum continuous rated power of the electric motor must not exceed 500 watts instead of 250 watts as set out in the current regulations?

PACTS Response: *PACTS opposes the proposed changes to how EAPCs are classified so that the maximum continuous rated power of the electric motor must not exceed 500 watts instead of 250 watts as set out in the current regulations.*

Question 2

Explain your response to question 1. Are there any additional benefits or risks (including in relation to road safety) not referenced in this document?

PACTS Response: *PACTS opposes the proposed increase to the maximum motor power for the following reasons:*

- *it increases the EAPC's rate of acceleration and possible maximum speed. Increased acceleration and increased speed put the rider and other road users at greater risk of injury in the event of a collision.*
- *tampering is likely, especially as the proposals would incentivise owners to increase the power of existing 250W motors. This increases the risk of battery failure, and associated fires.*
- *differentiation between the cycles with greater power is difficult for members of the public and police to identify. Elsewhere cycles powered to 250W are well-established and popular. Piecemeal increases allowing some cycles with 500W have resulted in confusion and safety concerns.*

Further details to this response, and evidence, are provided in the answer to Question 3 below.

Question 3

Provide any relevant evidence to support your responses to questions 1 and 2.

PACTS Response:

Acceleration, deceleration and speed differential

The acceleration of existing EAPCs is limited by the pedalling of the rider and the 250W motor. With increased motor power this acceleration would increase. Greater acceleration, from a standing start in particular, would result in greater differential speeds from other riders, especially those relying solely on human-pedal-power. With the expectation that higher power EAPCs would continue to be used on existing cycle infrastructure, this would put other road users at greater risk.

Converse to acceleration is deceleration. As noted in the consultation documentation, when the greater power is used for propelling a heavier cycle, the severity of injury in the event of a collision is increased. If the changes were made, brake safety standards and legal requirements for braking currently applicable to EAPCs would need to be reviewed.

Both acceleration and deceleration impact speed differential. The risk of speed differential is specifically captured by iRAP (the International Road Assessment Programme), the umbrella programme for Road Assessment Programmes (RAPs) worldwide. They operate a specific assessment scheme for cycle infrastructure, CycleRAP.⁴ Within it, risk is calculated based on the mean operating speed. In addition to average free flow speed, speed differential is also recorded. CycleRAP's guidance states that:

“If the standard deviation is greater than 10 km/h this increases the risk of conflict between bicycles, single bicycle crashes (i.e. those that do not involve others) and conflict with pedestrians where present. The risk increases further if there is a moderate to high proportion of cargo cycles, especially the conflict between bicycles. The greater speed differential will also increase the risk of conflict with motor vehicles where facilities are not separated.”

In other words, differences in acceleration, potentially in top-speed and in turning capacity of larger cycles, may require existing cycle infrastructure to be adapted (e.g. with passing places or other hard infrastructure) in order to accommodate more powerful EAPCs.⁵ Without this, risks to riders of all types of cycle are increased.

The impact of tampering

The impact of tampering brings both increased risk when a cycle is in use and also when it is stored and charged.

The current regulations governing EAPCs, 250W motors and pedal operation above 6 kph, are EU-wide. This standard is well-established with reputable suppliers and retailers across the continent as well as in the UK. As there is no standard 500W cycle readily on the market in Europe, changing to a greater permissible power here would encourage the use of conversion kits. These may be cheaper to purchase, and initially be more readily available than a new 500W cycle. However, they would come with the implication that the person converting the bike were a manufacturer, voiding any warranties their cycle came with and with the risks listed below.

The consultation documentation makes reference to tampering and suggests that police officers are able to enforce this when witnessing a cycle in use. However, as demonstrated with the extensive use of private e-scooters, the police are already struggling to enforce the ban on the use of private e-scooters in public places. That is despite the fact that, in the main, private e-scooters are easily identifiable as such. Identification of a tampered EAPC would not be immediately obvious by sight. It may or may not be pedalled and may be

⁴ [CycleRAP - iRAP](#)

⁵ [Institute for Transportation and Development Policy. \(2019\). The Electric Assist: FOR MORE LIVABLE CITIES THE ELECTRIC ASSIST: People for Bikes](#)

travelling at above 15.5mph by human power or greater. Measuring the speed of the cycle or testing its power on the roadside is not straightforward for the police to do.

PACTS member, the Bicycle Association, have been crucial in the preparation of new guidelines for EAPCs owners, published by the DfT.⁶ These repeatedly emphasise the importance of buying and using reputable products and warn against modifying cycles to increase power. The two-fold implications of doing this are explained: the cycle would become an unregistered motorcycle bringing penalties if used, and modifying electrical circuits increases the risk of fire. There have been many recorded incidents of fires in the UK.

Two wheeled vehicles, be they pedal cycles or mopeds, are already being extensively used by the gig economy. There are existing concerns over the pressure which gig-economy workers are under and the impact this has on their safety and that of other road users.⁷ Some measures are being taken to address this.⁸ However, there are limited means to enforce these, and to improve safety, when riders are personally responsible for the safety of their own vehicle. These riders, for whom speed and cost are priorities, are those most likely to be incentivised to tamper with their bikes. If 500W power were permitted, they may well tamper with existing cycles to increase their power, or tamper with new 500W motors to make them even more powerful. If a cycle is tampered with to increase its power, it may well be tampered with to boost its speed beyond the 15.5mph limit as well (a possibility noted in the consultation impact assessment). Increasing the penalties for tampering may be a disincentive but would be reliant on tampering being readily identifiable.

Experience from Europe

As noted above, the current regulations governing EAPCs in the EU are for 250W motors and pedal operation above 6 kph. Conversion kits are available but are not readily regulated for.

The Netherlands has also recorded an increase in collisions involving e-cycles ridden by older people.⁹ The indication is that falls are more likely to happen when the cycle is coming to a stop or starting off. It may be that the greater weight of the EAPC is more difficult for the rider to manage. Motors with greater power, and in the case of throttle only-control, a larger battery, would have greater weight and therefore bring with them the increased associated risks.¹⁴

Experience from Australia

Within Australia, the national (Commonwealth) requirements are for EAPCs to be limited to 250W.¹⁰ However, one region, New South Wales, has recently adopted the use of 500W powered EAPCs.¹¹ The decision was made against industry advice, with concerns matching

⁶ [Battery safety for e-cycle users - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/battery-safety-for-e-cycle-users)

⁷ [Nicola Christie, Heather Ward, Delivering hot food on motorcycles: A mixed method study of the impact of business model on rider behaviour and safety, 2023](#)

⁸ [Meal and Grocery Delivery Company Motorcycle Road Safety Charter - Transport for London \(tfl.gov.uk\)](#)

⁹ Schepers, J.P.; Weijermars, W.A.M.; Boele, M.J.; Dijkstra, A.; Forest, N.M., [Older cyclists, Accidents involving older cyclists and factors that play a role in them, 2020](#)

¹⁰ <https://www.legislation.gov.au/F2005L03850/latest/text>

¹¹ <https://www.transport.nsw.gov.au/roadsafety/bicycle-riders/ebikes>

those stated above. Of special concern has been the increased use of poor-quality, higher-powered conversion kits.¹² Since the permitted increase in EAPC power from 250W to 500W, e-cycle battery fires in New South Wales have increased from 1 in 2021, to 11 in 2022 and 42 in 2023.¹³

In New South Wales the change has not been in place long enough for casualty data to be collected to provide an understanding of the relative danger or hazard caused by more powerful cycles. Collecting data will be a challenge as there are no fewer than seven different definitions of an e-bike across the country. Police cannot readily identify the power or speed restrictions at the time of any incidents (especially if the motor is damaged and cannot be tested).

It may be that, if the proposals from the UK government were to go ahead, the UK would find itself in the confusion which New South Wales faces. How would EAPCs with an increased power be distinct from existing 250W EAPCs? How would the 500W be provided in a safe and regulated way? How would EAPCs which are entirely throttle controlled, ie may be served with pedals, but those pedals are not required to propel the cycle forward, be distinct from electric powered mopeds?

Question 4

Do you support or oppose the proposed change to allow EAPCs to have throttle assistance up to 15.5mph (25km/h) without the need for type approval, instead of 3.73mph (6km/h) as currently regulated?

FACTS Response: *FACTS opposes the proposed change to allow EAPCs to have throttle assistance up to 15.5mph (25km/h) without the need for type approval, instead of 3.73mph (6km/h) as currently regulated.*

Question 5

Explain your response to question 3. Are there any additional benefits or risks (including in relation to road safety) not referenced in this document?

FACTS Response: *FACTS opposes the proposed change to allow EAPCs to have throttle assistance up to 15.5mph (25km/h) without the need for type approval, instead of 3.73mph (6km/h) as currently regulated for the following reasons:*

- *EAPCs which do not require active pedalling are more akin to motorcycles than pedal cycles;*
- *it increases the EAPC's rate of acceleration and average speed. Increased acceleration and increased speed put the rider and other road users at greater risk of injury in the event of a collision.*

¹² [Submission 29 - Bicycle Industries Australia.pdf \(nsw.gov.au\)](#)

¹³ Data provided by [Bicycle Industries Australia](#)

Further details to this response, and evidence, are provided in the answer to Question 6 below.

Question 6

Provide any relevant evidence to support your responses to questions 4 and 5.

PACTS Response:

Motor-cycles rather than pedal-cycles

We consider the most significant risk to be that EAPCs powered entirely by mechanical power are more akin to motorcycles than pedal cycles. Motorcycles are classed as motor vehicles. Riders who have the privilege of travelling entirely by mechanical power have the responsibility to meet various requirements. The purpose of this is to provide for their safety and the safety of other road users, as well as contributing to a means for recourse by others in the event of a collision. In the case of motorcycles, these include wearing a helmet, having insurance, riding a registered and taxed vehicle, completing training, paying tax, and being at least 16 years old.

While the proposals omit a mechanism for riders to demonstrate their increased level of responsibility, we cannot support the changes. While the changes also omit any further requirements for a clear distinction between existing EAPCs, pedal cycles, the higher powered EAPCs and electric powered motorcycles, we are concerned that the public will purchase, possibly inadvertently, a motor vehicle on the assumption it is a pedal cycle. This includes using a motor vehicle where currently only pedal cycles and existing EAPCs can be used. Specifically people riding pedal cycles are currently permitted to ride in some off-road spaces such as parks, open spaces, on bridle ways and on byways. In a number of these places they share space with pedestrians; including the very young, elderly, disabled. The safety implications of people riding purely throttle powered bikes as though they were pedal cycles is PACTS' concern.

Statutes

Electrically assisted pedal cycle have specifically been classified, within the Road Traffic Act 1988 clause 189c, so they are 'treated as not being a motor vehicle'. This is due to the requirement that they be propelled with the use of pedals. The electrical power is to aid, and not exclude the need, to pedal. We believe that to remove the need for EAPCs to be pedalled, because they would be entirely mechanically powered, would require an amendment to the statute.

Although there are means by which twist-and-go powered bikes can be operated on UK roads, they have to meet a range of technical requirements.^{14,15} Specifically, they must be fitted with pedals which are not just cosmetic but can be used to actively propel the cycle. It must not be solely throttle powered. Being solely throttle powered would render it a motor vehicle.

PACTS would like to query whether confirmation has been made that the 'pedal assisted' element of the statutory exemption from the 'motor vehicle' definition in the Road Traffic Act 1988 s189 can be amended solely by means of statutory instrument, as proposed in this consultation. PACTS enquires whether an amendment of that statutory provision itself is required, therefore involving more significant changes to legislation.

Acceleration

By removing of the need for the use of pedals, and in the absence of any regulation to limit the rate of acceleration, an EAPC rider would be able to reach the maximum travelling speed more quickly than a rider relying on pedal power. This is supported by findings that show that comparing an e-scooter, Segway and a pedal cycle, the entirely throttle powered vehicle (the e-scooter) was the one that could accelerate the fastest.¹⁶

Risks associated with greater acceleration as well as the impact of tampering, and hence potential greater speed, for both the rider and other road users, are detailed in the response to question 3 above.

Question 7

Do you support or oppose limiting either or both of the proposals to disabled people with impairments that affect their mobility and who would benefit from the proposals? If applicable, provide views on which disabled people the proposals should apply to. Explain your response and provide any relevant evidence.

PACTS Response: *PACTS does not support the implementation of these proposals, as they have been provided, solely for disabled people. There may be ways in which mobility could be improved through greater input from a mechanical means. However, the concerns listed above, relating to acceleration, weight, tampering, would still apply. Alternative, specific evidence-based proposals should be considered instead.*

¹⁴ [Electrically assisted pedal cycles \(EAPCs\) in Great Britain: information sheet - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/442222/eapc_information_sheet.pdf)

¹⁵ [Regulation \(EU\) No 168/2013 of the European Parliament and of the Council of 15 January 2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricyclesText with EEA relevance \(europa.eu\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32013R168)

¹⁶ Billstein L, Svernlöv C, Evaluating the Safety and Performance of Electric Micro-Mobility Vehicles Comparing E-bike, E-scooter and Segway, Department of Mechanics and Maritime Sciences Chalmers University of Technology Gothenburg, Sweden 2021, www.chalmers.se

Question 8

Do you support or oppose limiting either or both of the proposals to e-cargo bikes? If applicable, provide views on how e-cargo bikes could be defined for these purposes. Explain your response and provide any relevant evidence.

PACTS Response: *PACTS opposes the proposals being applied to any bike, including e-cargo bikes.*

Existing EAPC cargo cycles with a power of 250W are successfully used to make deliveries in the UK and across Europe.¹⁷ Their zero emissions, small size and manoeuvrability are attractions for their use in last-mile deliveries. Safety for riders and other road users is a priority.

PACTS does not see justification for the increased power of e-cargo cycles, especially when there is no indication of what constitutes an e-cargo cycle. Without a clear definition it would be difficult for riders and enforcement authorities to identify the differences. Providing cargo cycles with additional power would, as explained against questions 2 and 3 above, result in the cycle travelling with greater acceleration. The additional safety implications of this, when considering a cargo cycle, are its large size and mass relative to other cycles. This, especially when there is a speed differential, increases the potential for more serious injuries in the event of a collision.

Should e-cargo cycles be provided with greater power, consideration should be made of their dimensions and laden weight. This reflects the hierarchy of road users included in the Highway Code. PACTS considers that appropriate training should be required for operating larger, heavier e-cargo cycles. In the Netherlands enhanced licences are proposed for riders of cargo cycles (those taking goods as well as passengers) and suggested regulations include that riders must be over 18 years old.¹⁸

Question 9

Provide any relevant evidence in response to the questions in the [impact assessment](#) – see paragraph 33.

PACTS Response: *PACTS is not in a position to comment.*

¹⁷ UPS presented at a PACTS conference in March 2023 - [Artur Drenk - Role of e-cargo bikes in zero-emission logistics #UPS #futuretransportation \(youtube.com\)](#)

¹⁸ [Marco Reijne - Integrating light electric vehicles \(LEVs\) into our cycling infrastructure #cycling \(youtube.com\)](#)

Question 10

What, if any, evidence can you supply on the current size of the e-cycle stock owned by UK transport users and the total annual trips made?

***PACTS Response:** PACTS is not in a position to comment. Its member, the Bicycle Association, can provide details.*

Question 11

What, if any, evidence you supply on the current size of the e-cycle market in the UK, including manufacturing volumes, or its potential future growth rate?

***PACTS Response:** PACTS is not in a position to comment. Its member, the Bicycle Association, can provide details.*

Question 12

Do you have any:

- estimate of the response that e-cycle manufacturers will have to the proposed regulatory changes and any costs and benefits associated with that response
- costs associated with the response that e-cycle manufacturers will have to the proposed regulatory changes
- benefits associated with the response that e-cycle manufacturers will have to the proposed regulatory changes

***PACTS Response:** PACTS is not in a position to comment. Its member, the Bicycle Association, can provide details.*

Question 13

What, if any, evidence can you supply on whether and how market prices for e-cycles might be affected?

***PACTS Response:** PACTS is not in a position to comment. Its member, the Bicycle Association, can provide details.*

Question 14

Specifically in respect of the proposed regulatory changes what estimate, if any, do you have on the response of:

- consumers to any change in e-cycle function and performance – in particular, how it might affect the number of trips taken

- transport users to any change in e-cycle function and performance – in particular, how it might affect the number of trips taken

PACTS Response: *PACTS is not in a position to comment. Its member, the Bicycle Association, can provide details.*

Question 15

What, if any, evidence can you supply on the number and size of businesses that might be affected by these proposals – in particular, whether small and micro businesses may be affected?

PACTS Response: *PACTS is not in a position to comment. Its member, the Bicycle Association, can provide details*

Question 16

What, if any, evidence can you supply on what impact these proposals might specifically have on disabled people?

PACTS Response: *PACTS is not in a position to comment.*

Question 17

What, if any, evidence can you supply on what impact these proposals might specifically have on e-cargo bike users?

PACTS Response: *PACTS is not in a position to comment.*