

28 February 2019

National Transport Commission
Level 3/600 Bourke Street
Melbourne Vic 3000
Attention: Anthony Pepi

Via: apepi@ntc.gov.au

AGF Submission to Barriers to the safe use of innovative vehicles and mobility devices

Dear Mr Pepi

The Amy Gillett Foundation (AGF) welcomes the opportunity from the NTC to consider the use of all innovative mobility devices from a national perspective. There is benefit in national consistency across all road rules and road use for all modes. The AGF is a national organisation with a mission to reduce the incidence of serious injury and death of cyclists in Australia. We draw on evidence and international best practice, and collaborate with governments, business and the community to create a safe environment for cyclists, while maintaining an efficient road network for all road users.

Safety is the primary concern for the AGF especially with an increased exposure of road users to relatively unprotected modes of travel. Practical and measurable outcomes should be articulated for safety and for increasing the share of active transport. Further, these outcomes should be reflected in a national target for making safe and accessible infrastructure available to the travelling public.

In this submission, we have focused on four questions (Q3-Q6) specifically as they related the use of innovative vehicles and cycling infrastructure and electric bikes. We have provided a summary of our key considerations in the following pages. In addition, we draw your attention to a recent research study commissioned by the RACV, undertaken by research staff at Monash University on the safe use of e-bikes which looked specifically at the intersection between e-bikes and the current cycling infrastructure as well as implications for safety of older e-bike users.

We welcome engagement on issues related to bicycle/e-bike rider safety and encourage you to contact us if you have any questions or require additional information.

Yours sincerely



Phoebe Dunn
Chief Executive Officer
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Contributors to the submission

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Additional advice	
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Clarification of terminology

Please note that throughout this submission we have differentiated between electric bicycles (e-bikes) as defined in the Australian Road Rules and the other listed types of vehicles. We will refer to e-bikes explicitly. When we refer to ‘innovative vehicles’ we are referring to motorised recreational devices (i.e. rollerblades, roller skates, skateboards etc.), motorised scooters, wheeled recreational devices, wheeled toys and segways. We have not referred to wheelchairs, motorised wheelchairs nor motorised mobility scooters in this submission.

Response to Issues Paper questions

3. What uses of innovative vehicles need to be considered as part of this investigation?

There are likely to be many potential impacts (positive and negative) to increased use of innovative vehicles particularly as first and last mile solutions or as alternatives to walking. However, their use does raise the question – where will people ride these devices?

Safety must be a key consideration. Safety in terms of the user of the innovative vehicle as well as the safety of people already travelling in the space.

We anticipate that from a regulatory perspective, these vehicles will be classified within an existing road user mode (i.e. pedestrian or bicycle). Depending on the outcome of that decision, there will be consequences in relation to use. From the AGF perspective, concern arises in the classification of these devices as bicycles.

While intuitively permitting these devices to be used in cycling infrastructure including on-road bike lanes and shared paths may be considered a viable option, it is not clear if there are unintended or unforeseen consequences. Despite national guidelines, cycling infrastructure is often sub-standard, often too narrow for the current volumes of cyclists, particularly along popular urban routes and on-road bike lanes. Such limitations are amplified when the infrastructure is shared and speed differentials between vehicle types increase.

The Amy Gillett Foundation recommends a comprehensive risk assessment and/or research trial be conducted before any changes to the law to ensure safe outcomes for everyone. There is a need to identify the safest infrastructure for these innovative devices be used to ensure the viability and potential additional safety issues that may be created. Important considerations include whether a more complex mix of innovative vehicles sharing cycling infrastructure should lead to increasing the road space set aside for non-motor vehicle use and what additional separation between modes may be warranted. Notably, neither of these considerations is typically encompassed in regulation

The following three questions have been responded to in relation to the use of e-bikes only.

4. What key factors need to be considered when determining safe rules of operation (including speed) for innovative vehicles on roads and road-related areas?

While the NTC Issues Paper states that e-bikes are power limited to 200 watts, the Amy Gillett Foundation supports the current definition of electric bikes as provided in the [Vehicle Standard \(Australian Design Rule – Definitions and Vehicle Categories\) 2005 Amendment 6, May 2016](#) that specifically states an increase in the allowable power from 200 to 250 watts and restricts the top assisted speed to 25 kilometres per hour. Further, we support the current definition that e-bikes that meet the vehicle standard are classified as bicycles and riders are afforded the same rights and responsibilities as riders of pedal bicycles including access to all cycling infrastructure including on-road bike lanes.

5. What are the practical and measurable outcomes required from a nationally-consistent policy and regulatory framework for innovative vehicles?

We consider the current policy and regulatory framework for e-bikes to be adequate and provide the necessary guidelines for the bicycle industry and consumers alike. E-bikes that meet the international standard EN 15194 for power-assisted pedal cycles provide access for Australian consumers to the global market and increase the likelihood that people will consider a more active mode of transport for some trips (compared to a motor vehicle).

6. What evidence-based distinctions between acceptable and unacceptable levels of risk associated with the use of innovative vehicles could be considered to inform the way innovative vehicles are regulated?

As discussed above, e-bikes are currently classified as bicycles and as such riders are subject a level of risk comparable to pedal bicycle riders. However, there are additional considerations for e-bike use that may increase the risk among some riders.

We recommend that the NTC consider the scientific evidence. While older adults report a number of benefits associated with e-bike use, the speed, weight, and stability of e-bikes can also be a concern. E-bikes can be harder to balance and steer, and pose a higher risk of falling while mounting or dismounting.¹ Optional power can encourage riding at speeds that are harder to control, and arriving faster than other road users expect, which may cause collisions.² In terms of

¹ Twisk, D. A. M., S. Platteel, and G. R. Lovegrove. 2017. An experiment on rider stability while mounting: Comparing middle-aged and elderly cyclists on pedelecs and conventional bicycles. *Accident Analysis & Prevention* 105:109-116. doi: <https://doi.org/10.1016/j.aap.2017.01.004>.

² Boele-Vos, M. J., K. Van Duijvenvoorde, M. J. A. Doumen, C. W. A. E. Duivenvoorden, W. J. R. Louwerse, and R. J. Davidse. 2017. Crashes involving cyclists aged 50 and over in the Netherlands: An in-depth study. *Accident Analysis & Prevention* 105:4-10. doi: <https://doi.org/10.1016/j.aap.2016.07.016>.

safety, a study of single-bicycle crashes by e-bike users in Switzerland based on self-report survey data found that all age groups experienced similar rates of single-bicycle crashes, but older adults were more likely to experience a serious injury.³ This finding is consistent with a similar pattern observed for use of conventional bicycles, and may relate to increased vulnerability to injury for older adults in the event of a bicycle crash (see above).

There is limited evidence indicating that crash and injury risks differ for e-bikes and conventional bicycles when exposure to risk is taken into account (Hertach et al. 2018). These assessments are complicated by several factors such as standardized reporting of bicycle injuries (e.g. by police, hospitals, or self-reported), differing styles of cycling, and differing socio-demographic attributes of cyclists.

Turning to local research, a recent study from Monash University (Johnson and Rose, 2015) reported that some e-bike riders, particularly older or less experienced riders, may have a higher crash risk due to their lack of expertise on the e-bike. Unlike pedal bicycles that require a level of fitness to reach a higher speed, e-bike riders can reach the top power-assisted speed of 25 kph without the same level of fitness or experience as a pedal bicycle rider. This may have implications in terms of bicycle handling, stopping and cornering. Further, the heavier weight of e-bikes may create handling issues for some riders. In addition to the risk from being inexperienced, the findings supports risks from being more frail, from more frequent in-traffic manoeuvring and from e-bike mounting/dismounting mishaps. It would also suggest that the same older citizens face greater risks as cycling when sharing with e-bikes. The Executive Summary from the report is included (p.6) and the full report can be accessed online ([link](#)).

Finally, we draw the NTC's awareness to local research that is currently underway at CARRS-Q in Queensland on e-scooters (observational study). Outcomes from this study are likely to be of interest in this space.

³ Hertach, Patrizia, Andrea Uhr, Steffen Niemann, and Mario Cavegn. 2018. Characteristics of single-vehicle crashes with e-bikes in Switzerland. *Accid Anal Prev* 117:232-238. doi: 10.1016/j.aap.2018.04.021.

Johnson and Rose (2015) Safety implications of e-bikes. Monash University Report for RACV.

Executive Summary

Electric bicycles or e-bikes are bicycles that are fitted with an electric motor to provide the rider with power assistance. E-bikes offer performance characteristics that address some of the traditional barriers to cycling. In Victoria, Australia, e-bikes are legally defined as bicycles and riders can ride anywhere a bicycle is permitted. E-bike riders are therefore subject to the same rules and regulations as conventional pedal bike riders.

While e-bike use is growing around the world, there is still limited research directed at this mode. The purpose of this study was to investigate the safety implications of e-bike use in Victoria. The study explored the perceptions of safety at various on and off-road locations, along with the crash experiences of e-bike riders. The study provides important new insights into how e-bikes are being used, and a better understanding of the safety implications of e-bike use.

The study includes three components: a literature review, a review of the current infrastructure design standards and a survey of e-bike riders.

From the riders' perspective of cycling infrastructure, studies have found that there is no significant difference in perceptions of comfort, including safety, by bike type (i.e. pedal bike or e-bike). There were no studies identified in the literature review that directly addressed the cycling infrastructure design requirements for e-bikes or determined if the requirements differ from those of pedal bicycles. However, the main requirements identified for e-bike riders: wider lane and path widths, smooth and flat surfaces, adequate sight distance and better connectivity, have been found to be important when designing cycling infrastructure for both e-bike and pedal bike riders.

To investigate the experiences and expectations of e-bike users in on and off-road situations, an online survey was conducted. Most e-bike riders were found to be older riders with less riding experience and potentially lower cycling proficiency.

Consistent with the literature reviewed, survey respondents highlighted the importance of dedicated

infrastructure in providing an environment in which they feel safe to cycle. While respondents indicated they felt very safe on facilities where they were separated from traffic, they felt unsafe in unprotected bicycle lanes. In addition, those e-bike riders who were not previously cyclists felt even less safe on unprotected bike lanes than their experienced counterparts.

The survey identified poor path surface, spot speed, the heavier bike and rider error as contributing factors to unsafe events involving e-bikes. This is consistent with past surveys. Those factors have implications for designers of bicycle facilities.

Australian bicycle facility guidelines currently make no reference to e-bikes. Two particular features of e-bikes need greater consideration by bicycle facility designers: their greater hill climbing capacity and their higher spot speed relative to the speed the rider would be travelling at if riding a conventional bicycle.

The particular features of bicycle facilities which may require closer attention from designers include:

- the higher hill climbing capacity when bicycle routes are being designated
- horizontal and vertical curve radii and lateral clearances, as well as widths for bicycle lanes and paths
- risks associated with loose path surfaces when path materials are being chosen and path maintenance is being undertaken
- better management of increased interactions by users through signage and education.

The experience profile of e-bike riders suggests there is a need for education for e-bike riders about the safe use of their e-bike. As e-bikes continue to grow as a proportion of the bicycle fleet it is recommended that priority should be given to the development of education materials or rider training programs, particularly for older e-bikes riders and potential e-bike riders.