28 February 2018

Attn: Anthony Pepi
Manager Productivity and Safety
National Transport Commission
Level 3, 600 Bourke Street
MELBOURNE VIC 3000

Dear Mr Pepi,

Please find enclosed RACV's submission to the National Transport Commission's Issues Paper for *Barriers to the safe use of innovative vehicles and motorised mobility devices.*

Yours sincerely,

BRYCE PROSSER
GENERAL MANAGER, PUBLIC POLICY AND CORPORATE AFFAIRS

RACV Public Policy and Corporate Affairs

Royal Automobile Club of Victoria (RACV) Ltd
ABN 44 004 060 833

485 Bourke Street, Melbourne Victoria 3000 Australia
Telephone 03 9703 6103
racv.com.au

Submission Regarding

Barriers to the safe use of innovative vehicles and motorised mobility devices

to National Transport Commission

February 2019

Submission to the National Transport Commission regarding "Barriers to the safe use of innovative vehicles and motorised mobility devices."

Introduction

RACV's transformation from operating as a motoring club to an organisation that touches the lives of Victorians in home, mobility and leisure, places us front and centre in the future development of Victoria. Our Corporate Strategy sets the foundations for even greater expansion into these key areas through advocacy, innovation and making membership more meaningful.

With more than 2.1 million members, RACV is a household name in Victoria and a highly trusted organisation. We have long represented our members on motoring and transport issues, advocating on their behalf, and expressing their views to both government and stakeholders.

How Victorians effectively, efficiently and safely move around their state in the future is of vital importance, and RACV is pleased to have the opportunity to provide input to the National Transport Commission on the issues paper "Barriers to the safe use of innovative vehicles and motorised mobility devices." RACV has been an active contributor and commentator in the innovative vehicle and mobility device space, producing the document "Assessment of new recreational transport devices 2016" and providing safety advice on the RACV website and through the Years Ahead program. Based on previous feedback and research, we have developed a series of recommendations for the Commission's consideration.

Recommendation Summary

- Outline an accurate timeline that demonstrates how long the road rules implementation and legislation process is likely to take.
- Ensure that the definition of an innovative vehicle under the federal road rules is holistic enough to consider current, emerging and unknown future technology.
- Mobility devices and motorised scooters should be covered by stakeholder accident compensation schemes, like Victoria's TAC scheme, in the same manner that bicycles are.
- Review the existing road rules for mobility scooters and electric wheelchairs to provide a clear definition of what is required to own and operate these devices.
- Determine the appropriate locations for mobility devices and innovative vehicles to be used i.e. footpaths, bike lanes or roads.
- Require riders of innovative devices to give way to pedestrians on footpaths.
- RACV believes consistency across use and operation of devices is important for safety and ease of compliance.
- Consider implementing the Queensland Road Rules for Rideables into the Australian Road Rules, to ensure consistency among the states and territories.
- Set an off-road speed restriction of 15km/h on all devices to ensure safe outcomes that are in-line with international standards.
- Set an on-road speed restriction of 25 km/h on all devices to ensure safe outcomes that are in-line with international standards.
- Measurable outcomes should be taken from injury records, the launch of commercial schemes and import and sales data.
- Consider the importance of personal protective equipment, using existing data from cycling statistics.
- Review the effectiveness of the categorisation of motorised mobility devices and whether a new category that defines motorised mobility devices as something other than a pedestrian or a vehicle needs to be created.

- RACV supports government action to address deficiencies with the existing rules, and to provide a regulatory framework governing the importation of innovative devices and motorised mobility devices, their sale to the public and their use on roads and road-related areas.
- Implementation of policy regarding the construction, performance and use of motorised mobility devices should be implemented at a national level after rigorous consultation with industry professionals and the users of the devices.
- Consider requiring speedometers and speed limiters to be installed on devices.
- Education campaigns will be needed to ensure correct use of devices and appropriate safety gear.

Commercial innovative vehicle operator recommendations:

- Consider requiring companies to utilise geofencing to prevent innovative devices from going to high-risk locations.
- Ensure that commercial innovative vehicle operators are subject to a safety and good behaviour permit process.
- Consider a registration fee for commercial innovative vehicle operators.
- Mandatory comprehensive insurance for vehicles that have a minimum wattage of 150w and a maximum speed limit higher than 10 km/h.
- RACV welcomes the inquiry into the existing road rules and regulations around the safe use of innovative vehicles and motorised mobility devices.

RACV plays an active role in informing Victorians of road rules, therefore, we would like to see the implementation of clear and easy to understand road rules that will provide accessibility to those that need it most, while at the same time encouraging transport innovation.

What characteristics need to be considered when defining what an innovative vehicle is?

The description needs to be adaptive to emerging trends and technology. The definition of what an innovative vehicle is needs to be broad enough to include known, emerging and potential innovative vehicles.

The use of innovative vehicles on all roads or road related areas needs to be considered as part of this investigation. Consideration also needs to be given about inclusion of these vehicles by State/Territory governments as part of compulsory third-party insurance such as that operated by Victoria's Transport Accident Commission.

RECOMMENDATION:

1. *Ensure that the definition of an innovative vehicle under the federal road rules is holistic enough to consider current, emerging and unknown future technology and regulate.*
2. *Determine the appropriate locations for mobility devices and innovative vehicles to be used i.e. footpaths, bike lanes or roads.*
3. *Mobility devices and motorised scooters should be covered by an accident compensation scheme, like Victoria's TAC scheme, in the same manner that bicycles are.*

What differences between motorised wheelchairs and mobility scooters need to be recognised by this project?

Both electric wheelchairs and mobility scooters require considerations around accessibility. These motorised mobility devices should be considered separately to innovative mobility devices, as they serve a different purpose and have differing design and build specifications.

The road rules for those who can operate a mobility scooter or wheelchair should undergo a review. Under 288 Clause 3 (c) of the road rules states “Because of the driver’s physical condition, the driver has reasonable need to use a wheelchair.” This definition is vague and not clear, which could result in misinterpretation.

The VicRoads pamphlet titled ‘A guide for choosing and using motorised mobility devices’ explains the road rule better, stating that “mobility scooters and electric wheelchairs are to be used only by a person with an injury, disability or medical condition which means they are unable to walk or have difficulty walking. People who do not have difficulty in walking are not permitted to use them.” This provides clarity to the user and gives a reasonable understanding of what is required to operate a mobility wheelchair or scooter.

This road rule should be reviewed to ensure what is required is clear and easy to understand. This road rule should further state, whether the user requires a letter or script from a doctor to prove eligibility.

Buyers and sellers of mobility scooters and motorised wheelchairs need to be provided with clear information to ensure only devices that are compliant with the road rules and legislation are sold. There needs to be stronger control and regulation over the importing of vehicles which do not comply with the Australian criteria. New stronger controls and regulations should also consider new innovative vehicles and eBikes that enter Australia. A coroner’s inquest into the death of a man who was hit by a cyclist operating an e-bike on a footpath found that many non-complaint e-bikes could easily enter Australia and be sold to people who may have little or no knowledge of the existing road rules and restrictions (Coroners Court 2015).

RECOMMENDATION:

1. *Review the existing road rules for mobility scooters and electric wheelchairs to provide a clear definition of what is required to own and operate these devices.*
2. *RACV believes consistency across use and operation of devices is important for safety and ease of compliance.*

What uses of innovative vehicles need to be considered as part of this investigation?
The road rules, laws and infrastructure for innovative vehicles needs to be adaptable and resilient. The definition of what an innovative vehicle is should be broad enough so that it includes existing and emerging technologies used for trips for any purpose within public roads and road related areas.

RECOMMENDATION:

1. *Ensure that the definition of an innovative vehicle under the federal road rules is holistic enough to consider current, emerging and unknown future technology.*

What key factors need to be considered when determining safe rules of operation (including speed) for innovative vehicles on roads and road-related areas?
To determine safe rules of operation for innovate vehicles we believe the following need to be considered:

- Speed limit of roads they can/cannot be used on
- Volume of traffic (including pedestrians and bicycle riders)
- Mix of traffic
- Road hierarchy
- Age of rider

- Dimensions of the device (weight, length, width and height)
- The speed at which mobility scooters, wheelchairs and innovative vehicles can travel. Features of the vehicle, for example a speedometer or speed limiter to conform with speed restrictions, and/or GPS if geofencing forms part of the regulations.
- Ownership - will the same rules apply to devices owned by private individuals as those that apply to commercially operated fleets?
- Use and possible requirement of personal protective equipment.

New regulations should encompass existing recreational devices as well as innovative vehicles to ensure consistency and to increase the likelihood of compliance ('one set of rules'). Safety, helmet wearing and regulations need to be written in a way that they are prescriptive enough to allow enforcement with users of current recreational devices, and also cover the intent of the rule to ensure as new vehicles enter the market, that they are clearly covered by existing regulations. We note that this is vital given the time lag in introducing changes to the Australian Road Rules, and to reduce the likelihood of jurisdictions introducing their own unique rules. A road rules timeline should be developed to provide an understanding of how long the proposed road rules will take to be implemented.

RACV does not support the registration of individual motorised mobility devices or innovative vehicles. Further, we do not support any moves to implement registration for individual bicycles. This would be an un-necessary and expensive impost on owners and the State. However, there could feasibly be requirements on operators of new commercial fleets to be able to identify the user of an innovative vehicle involved in an incident based upon their registered details and GPS tracking of each vehicle.

Current crash records are inadequate to allow analysis of crashes by different types of road users. We propose that separate categories of road user should be adopted for motorised mobility devices, innovative vehicles and eBikes and they should be included as a separate category in crash reporting to enable crash statistics and trends to be determined. We note this issue also extends further to different types of motorcycles for example motorbikes and scooters. Reporting of incidents are not always accurate and they are not always reported (Greig, Haworth & Wishart 2008)

An ongoing education campaign around safe and legal use of these devices should be implemented and the need for appropriate insurance or (TAC coverage) to cover potential liability should be explored, as per golf carts (VicRoads 2019).

Queensland recently legislated innovative devices under the definition of "Rideables" in response to the emergence of Lime eScooters.

In Queensland, devices catagorised as 'Rideables' must comply with the following rules:

- Must be used by a single person only.
- Must meet specific dimension requirements.
    - Be shorter than 1350mm in height.
    - Smaller than 1250mm in length.
    - Be within 700mm or 1250mm in width.
- Must not be able to exceed a maximum speed of 25km/h.
- Must not exceed a weight of 60kg, when not carrying a person.
- Have an electric motor.
- Must have at least a single wheel.
- Have a braking system.
- Must not have any sharp edges that will result in injury to the rider or others.

- When travelling at night or in hazardous conditions Rideables must have a flashing or white light on the front and a red light and reflector at the rear.

Riders of Rideables must comply and meet the following criteria:

- Riders must be over 16 years of age, or 12 with adult supervision.
- Wear a bicycle helmet.
- Not carry any passengers.
- Not operate a mobile device.
- Riders must not drink and ride.
- Riders must keep left and give way to pedestrians.
- Travel at an appropriate speed and distance that allows riders to stop safely before any collision with pedestrians.
- Riders must keep left to avoid oncoming bicycles and personal mobility devices.
- Only use the bicycle side of a shared path.

In Queensland, rideables must only be used on footpaths, with minor exceptions based upon the regulations around wheeled recreational devices. Riders are only allowed on roads with intention to cross or avoid an obstruction for a distance of 50 metres. Riding on local streets is also allowed, however, the local road must not have a speed limit exceeding 50km/h and it must have no dividing line or median strip.

As Queensland is the only state currently to legislate innovative vehicles, their model and findings should be used to **guide** the remaining states and territories in defining their future road rules. RACV supports the implementation of the rideables definition into the Australian road rules with further consideration to be given regarding the inconsistency between the appropriate age requirement for rideables (12 and over) and eBikes (no defined age) under the existing Queensland Road Rules.

However, RACV believes that a footpath and off-road speed limit for all rideables must be limited to 15 km/h.

A report prepared by the ARRB for RACV recommended a maximum speed of 12km/h for innovative vehicles. However, on consideration, and review of the European Standard (NSAI Standards 2009) which allows for electric powered wheelchairs and scooters to travel at up to 15km/h, and the Australian/New Zealand standard which permits the same for electric wheelchairs and mobility scooters, RACV recommends an off-road blanket speed of 15km/h for any vehicles that are considered not to be a motor vehicle under the road rules and an on-road blanket speed of 25 km/h.

Geofencing could be utilised to introduce lower limits in higher-risk areas, such as high-volume pedestrian precincts. eScooter company Bird has implemented geo-fencing, which allows the city of San Diego to create no-ride and no-parking zones (Tevrizian 2018).

RECOMMENDATION:

1. *Consider implementing the Queensland Road Rules for Rideables into the Australian Road Rules, to ensure consistency among the states and territories.*
2. *Set an off-road speed restriction of 15km/h on all devices to ensure safe outcomes that are in-line with international standards.*
3. *Set an on-road speed restriction of 25 km/h on all devices to ensure safe outcomes that are in-line with international standards.*
4. *Consider the importance of personal protective equipment, using existing data from cycling statistics.*

What are the practical and measurable outcomes required from a nationally consistent policy and regulatory framework for innovative vehicles?
A nationally consistent policy and regulatory framework may result in more innovative vehicles made available for sale or hire, and the launch of 'public' schemes. A consistent national policy should result in less confusion for users enabling greater compliance with the rules. Measurable outcomes may be around injury records, launch of commercial schemes, and import and sales data. Census survey data may provide evidence of usage.

RECOMMENDATION:

1. *RACV believes consistency across use and operation of devices is important for safety and ease of compliance.*
2. *Measurable outcomes should taken from injury records, launch of commercial schemes and import and sales data.*

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?
Innovative vehicles have only entered the market in recent years and various countries are adapting their road rules to address their presence. As innovative vehicles are a recent trend, data and evidence about the effects of their regulations are limited. However, recently the media has reported multiple examples of incidents involving eScooters.

It was reported (Rudavsky 2018) that within two months, Indianapolis Emergency Services received 46 calls regarding eScooter injuries and estimate that eScooter injuries resulted in up to 100 visits to the emergency room. However, a study in Austin, Texas revealed that there were less eScooter related injuries within a 5-month period than those on bikes. This study reported 37 injuries involving scooters and 81 involving bicycles.

In Los Angeles, 249 patients went to Los Angeles Emergency room in a one-year period because of scooter-related injuries. Only 4.4 percent of riders were reported to be wearing helmets and 8.4 percent of patients admitted were non-riders. During this time there were 195 bicycle related incidents and 181 incidents were walking related (Gilmour 2019). In Los Angeles scooters can travel up to 24 kilometres per hour, must not be ridden on sidewalks and helmets are required for riders under the age of 18 (AB-2989 2018).

However, a difficulty in comparing the number of injuries is that the prevalence of the actual devices and how often and how far they're used in each market.

Researchers at the University of California, Los Angeles found that 1 in 3 people who had been involved in an e-scooter accident in Santa Monica had been severely injured and needed to be transported to the emergency room by an ambulance. Fractures, falls, collisions and being struck were the most common incidents. The study found that less than five percent of patients were wearing helmets at the time of the incident and that eight percent of patients were non-riders, who were either hit by a scooter, or tripped over one on the street. The study recommended mandatory helmet laws, based on previous motorcycle and bicycle evidence and data (Mullins 2019).

These incidents reiterate the importance of rider education, helmet laws and rider road rule compliance. Cycling data should be gathered and used to guide the provision of motorised devices, as this is where most data and evidence is present.

To minimise any unacceptable risk, operators of innovative vehicle hire schemes should be subject to permits which will assess an organisation based on good corporate behaviour, their operational systems that will aid users with compliance with road rules and laws, and

agreed performance benchmarks to identify and respond to issues. The issues might be removing devices that obstruct footpaths or roads for example, both to reduce clutter and tripping hazards, or identifying users involved in incidents. Assessing operators based on compliance and good behaviour could ensure that hire schemes using innovative vehicles will operate cohesively within the existing road and road-related areas throughout Australia.

What is important is that there are standard national rules. Providers should not be required to negotiate rules with individual Councils, leading to potential confusion about what can and cannot be done on any particular street because the user of an innovative vehicle is not aware of what Council they are in on any particular leg of a journey.

RECOMMENDATION:

1. *Consider a regulatory mechanism to reduce clutter and litter for fleet innovative vehicles and ensure that local governments can apply blanket permit controls to manage the impact.*
2. *Ensure that commercial innovative vehicle operators are subject to a safety and good behaviour permit process.*

How do current classifications of drivers of wheelchairs as both 'pedestrians' and 'vehicles' in the Australian Road Rules create confusion?

Drivers of motorised mobility devices should not be classified as 'pedestrians' and 'vehicles' as they require different adjustments and considerations to be made. The road rules fail to interpret and consider the safety and needs of the users of these devices. Furthermore, these rules are complicated and could present confusion for both the user and enforcement authorities.

Rica, 2013, found that motorised mobility scooter novices had difficulty adjusting their speed and stopping due to their mental model of riding a bike. The research report recommended that there be a standardisation for mobility scooters to ensure that the controls are similar to using a car or motorbike, to curtail any learning curve that the riders may have. Further, education should be supplied to new mobility scooter users so that they can understand the limitations of their devices.

RECOMMENDATION:

1. *Review the existing road rules for mobility scooters and electric wheelchairs to provide a clear definition of what is required to own and operate these devices.*
2. *Review the effectiveness of the categorisation of motorised mobility devices and whether a new category that defines motorised mobility devices as something other than a pedestrian or a vehicle needs to be created.*
3. *Education campaigns will be needed to ensure correct use of devices and appropriate safety gear.*

Is there a need for construction and performance requirements for motorised mobility devices to ensure safe use on public transport infrastructure?

Dimensions, stability, manoeuvrability, safety and comfort considerations need to be made to ensure that motorised mobility devices can operate safely on public transport. The mobility scooter and wheelchair requirements need to consider the existing public transportation rules for each state and territory to ensure that standard national policy can be implemented.

RECOMMENDATION:

1. *Policy regarding the construction, performance and use of motorised mobility devices should be implemented at a national level after rigorous consultation with industry professionals and the users of the devices.*

What evidence is available on the road safety risks associated with motorised mobility device.
There are various non-compliant motorised mobility devices currently being sold. Various websites sell vehicles with maximum driving speeds of 15 km/h that have motor capacities ranging between 550w to 1600w. In Victoria, a motorised mobility device that can exceed 10km/h is classified as a vehicle, and therefore must comply with road rules for vehicles.

However, under the Australian Design Rule – Definitions and Vehicle Categories, a motorised mobility device cannot be registered in Victoria. If it were possible to register a motorised mobility device, complying with the existing road rules for vehicles could result in dangerous outcomes such as using it on the road.

Has the problem been accurately identified.
The document identifies that the road system is being challenged by the emergence of new types of vehicles and technology and that the state and federal regulatory frameworks have not been updated to provide for adaptive, accessible and safe outcomes. RACV's report 'Assessment of new recreational transport devices. (2016)' supports this claim and recommends that an Australian/New Zealand Standard or equivalent document be developed to address the existing ad-hoc nature of the rules regarding innovative vehicles, mobility devices, bicycles, motorcycles and cars.

The slow timeframe of the legislation process for the Australian Road Rules might result in state and territory governments acting independently and implementing their own road rules, resulting in ad-hoc laws between the states/territories. The study should consider options to speed the legislation process up or work with the states/territories and the federal government to minimise any inconsistencies in the road rules, if they do begin to legislate independently.

RECOMMENDATION:

1. *Outline an accurate timeline that demonstrates how long the road rules implementation and legislation process is likely to take.*

What are the likely costs and operational consequences of the problem for government bodies, businesses/operators and other organisations?
A consequence is giving more clarity to operators about the use of innovative devices in Australia and the rules and regulations that apply, which in turn will encourage investment in the sector if the rules are commercially acceptable.

Bike share company oBike stopped operating in Melbourne mid-2018 as a result of not being able to comply with new rules that were bought in. Councils required oBike to comply with a memorandum of understanding which outlined a set of rules. The Environmental Protection Authority (EPA) ordered oBike to clean up dumped bikes (ABC 2018). This reinforces the importance and need for performance-based regulations for mobility device operators, and enforceable financial consequences if they fail to perform. However, requiring commercial operators to develop agreements with every local council will be costly for operators and problematic for users. State based regulation and permits consistent with a national model is a better outcome.

In Washington D.C. when a bike share or mobility device company applies for a permit to operate, they must comply with a specific set of requirements. The district department of transport requires permit holders to hold no less than 100 bikes/mobility devices and no more than 600. Companies may request to operate more than 600 bikes/mobility devices, which their approval will then be based upon the company's good behaviour (District Department of Transportation 2018).

RECOMMENDATION:

1. *Ensure that commercial innovative vehicle operators are subject to a safety and good behaviour permit process.*

What are the likely costs and operational impacts of the problem on the broader community?
Is government action needed?
We have received anecdotal evidence that pedestrians have safety concerns with motorised vehicles on footpaths. Members have previously raised concerns about mobility devices and vehicles scaring them or bumping into them as they go past. Regulation should ensure that innovative devices do not conflict with pedestrians, cyclists or motor vehicles could be put into place to reduce these incidents. For example, speed restrictions, particularly in high risk locations.

RECOMMENDATION:

1. *Consider requiring speedometers and speed limiters to be installed on devices.*
2. *RACV supports government action to address deficiencies with the existing rules, and to provide a regulatory framework governing the importation of innovative devices and motorised mobility devices, their sale to the public and their use on roads and road-related areas.*
3. *Require riders of innovative devices to give way to pedestrians on footpaths.*

What are the broad options for reform?
RACV supports and recommends the following actions:

- Governments to develop a clear definition of categories of motorised personal mobility devices (or other preferred terms) and an appropriate legal framework.
- Governments to address inter-state inconsistencies in regulations for non-motorised recreational devices.
- Development of performance-based standards for devices in relation to:
    - Electrical or fuel safety.
    - Warning devices.
    - Lights and reflectors.
    - Speed control and limiting.
    - Braking performance.
    - Human factor requirements.
- Standardise regulations for safety equipment,
- Training, testing and licensing for riders of certain types of devices that may have complex controls, higher speeds and/or higher mass, including age for solo riding in different settings.
- Insurance arrangements.
- Third-party accreditation/certification and labelling of devices to aid buyers and regulatory authorities.
- Standardised rules across devices to simplify the user experience and the likelihood of knowledge and conformance with the rules.

RACV would like to see current motorised mobility device classifications in the Australian Road Rules made clear and for the rules to be nationally consistent.

RECOMMENDATION:

1. *Implementation of policy regarding the construction, performance and use of motorised mobility devices should be implemented at a national level after rigorous consultation with industry professionals and the users of the devices.*

Are there issues that have not been identified in the paper?
RACV would support the regulations currently applying to wheeled recreational devices and segways being reviewed and incorporated within any changes, to simplify and standardise the rules applying to users of similar types of devices.

Highlighted issues:

- Address concerns regarding the inconsistent design and operation of motorised mobility devices. Motorised mobility devices operate differently to cars and bicycles, which presents a hazard for new drivers or drivers who change devices.
- Consider the impact on the physical environment, including damage to footpaths and road safety.
- Consider any congestion that an increase in the use of innovative vehicles may create. Are footpaths, cycling lanes or roads appropriate for this?
    - Should the private owners of innovative vehicles be subject to different road rules to a commercial innovative vehicle operator?
- Will the road rule changes around mobility devices result in confusion or have the potential to create an unsafe environment? Education programs should be put into place for both motorised mobility devices and innovative vehicles to encourage safe operation throughout Australia. Mobile application based commercial innovative vehicle companies should consider supplying education through their respective mobile application. This would have the potential to address any gaps in knowledge that the riders or users may face.
- Should innovative vehicles be allowed on busy footpaths or in public spaces?
- Consider the implementation of geofencing or geo-speed limitations for commercial innovative vehicle operators.
- How can legislation ensure that commercial innovative vehicle operators are being socially, economically and environmentally responsible?
- Ensure that the road rules encourage commercial innovative vehicle operators to integrate the availability of their fleet with the existing public transport network.
- Future and existing legislation needs to be adequately holistic to encompass emerging technologies.
- Where should innovative vehicles be operated? Will the proposed road rules consider usage on footpaths, cycling lanes or roads?
- There needs to be development of a timeline for road rule implementation. Implementing road rules at a federal level and then further at a state level is likely to be a slow process. How can this be sped up?

References

AB-2989 2018, Assembly Bill No. 2989 Motorized scooter: use of helmet: maximum speed., *California Legislative Information,* viewed 30th January 2019, viewed at http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB2989

ABC 2018, oBike to leave Melbourne after crackdown on bicycle share company, *abc news,* viewed 24th January 2019, viewed at https://www.abc.net.au/news/2018-06-12/obike-dockless-bicycle-scheme-to-leave-melbourne/9860314

ARRB & RACV 2016, Assessment of new recreational transport devices, *ARRB & RACV,* viewed 22nd January 2019, viewed at https://www.racv.com.au/content/dam/racv/images/public-policy/reports/2016-Assessment-of-Recreational-Devices.pdf

Coroners Court 2015, "Albert Dean May", *Coroners Court,* viewed 01st February 2015, viewed at https://www.coronerscourt.vic.gov.au/sites/default/files/2018-12/AlbertDeanMay_423715.pdf

District Department of Transport 2018, Dockless Vehicle Sharing Terms and Conditions, *Government Of The District of Columbia Department Of Transportation Washington, D.C.,* viewed 25th January 2019, viewed at https://ddot.dc.gov/sites/default/files/dc/sites/ddot/page_content/attachments/Dockless%20Terms%20and%20Conditions%20-%202019%20-%20Scooters%20-%2011.02.18.pdfmm

Gilmour 2019, First study of e-scooter ER visits reveal exactly how riders (and walkers get hurt), *The Sacramento Bee,* viewed 30th January 2019, viewed at https://www.sacbee.com/news/state/california/article225198400.html

Greig, Haworth & Wishart 2008, Identifying programs to reduce road trauma to act motorcyclists, *The Centre For Accident Research & Road Safety,* viewed 25th February 2019, viewed at https://www.monash.edu/muarc/our-publications/reports/atsb174

Mullins 2019, New Study Provides 1st In-Depth Look At Severity Of Electric Scooter Accidents, *Wbur,* viewed 30th of January 2019, viewed at https://www.wbur.org/hereandnow/2019/01/25/severity-electric-scooter-accidents-study

NSAI Standards 2009, Electrically powered wheelchairs, scooters and their chargers – Requirements and test methods, *SAI Global,* viewed 29th January 2019, viewed at https://infostore.saiglobal.com/preview/is/en/2009/i.s.en12184-2009.pdf?sku=1377552

NSAI Standards 2013, Wheelchair Requirements and test methods for electrically powered wheelchairs (including mobility scooters), *Standards Australia,* viewed 29th of January, viewed at https://infostore.saiglobal.com/en-au/Standards/AS-NZS-3695-2-2013-101369_SAIG_AS_AS_212949/

Rica 2013, Research Report: The Usability of Mobility Scooter Controls, *Rica,* viewed 22nd January 2019, viewed at https://www.ridc.org.uk/sites/default/files/images/research-consultancy/research-reports/Rica%20-%20Usability%20of%20mobility%20scooter%20controls,%202013.pdfl

Rudavsky 2018, ER docs warn of scooter risk: 'Just because you can get on them doesn't mean you should', *Indianapolis Star,* viewed 30th January 2019, viewed at https://www.indystar.com/story/news/2018/11/13/bird-lime-electric-scooter-safety-accidents-increased-injuries-emergency-room-trips-doctors-say/1892893002/

Tevrizian 2018, Dockless Scooter Company Adds Geofencing, Report Feature as Safety Measures, *NBC San Diego,* viewed 25th February 2019, viewed at https://www.nbcsandiego.com/news/local/Dockless-Electric-Scooters-Bird-Safety-Measures-Report-Incidents-493720391.html

VicRoads 2016, A guide for choosing and using motorised mobility devices, *VicRoads,* viewed 20th February 2019, viewed at https://www.vicroads.vic.gov.au/safety-and-road-rules/pedestrian-safety/motorised-mobility-devices

VicRoads 2019, Golf carts and ride-on lawn mowers, *VicRoads,* viewed 31st January 2019, viewed at https://www.vicroads.vic.gov.au/safety-and-road-rules/road-rules/a-to-z-of-road-rules/golf-carts-and-ride-on-lawn-mowers

Appendix A: International regulations

Many countries overseas have begun to legislate innovative devices over the past few years, with some examples being:

Finland (Ministry of Transport and Communications)

Walking-assisting/replacing mobility devices (Kickboards & roller skates):
Max. 1 kW
Max. 15 km/h
Subject to pedestrian traffic regulations.
No insurance required.

Light electric vehicles (segways, larger transportation devices):
Max. 1kW
Max. 25km/h
Max. 80 centimetres in width
Subject to cycling traffic regulations (segways can be used on footpaths).
No insurance required.

Pedelecs
Max. 250 W
Max. 25 km/h
Pedalling required.
No insurance required.

Motorised bicycle
Max. 1 kW
Max. 25 km/h
Max. 1 m in width
No pedalling necessarily required.
Insurance required.

Washington D.C.

The District Department of Transport (2018) recognises mobility device share companies as an emerging trend and has provided a regulatory framework that addressed the following:

- The need to limit the number of permit holders, this allows the government to assess any future fleet expansions based on good behaviour.
- All devices and vehicles must be kept in good condition and it must be easily identifiable with a logo.
- Permit holders must supply a toll-free telephone number, website address, information on how to report faults, and display a unique identification number.
- Dockless vehicles must accept cash payments and be able to be located and unlocked without a smart phone.
- Permit holder must provide a free helmet to customers upon request, within 14 days of the request.
- Devices and vehicles should be removed from public spaces and events during days of extreme weather.

The eScooter company Bird offers free helmets to riders, which can be requested within the Bird mobile application. See https://www.bird.co/safety/
As innovative device companies become active, exploration of mandatory safety gear and education should be considered and encouraged with good behaviour permits.