#### **Response to Issues Paper:**

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

Dr John McPherson

February 14, 2019

The National Transport Commission (NTC) review of the Australian Road Rules (ARRs) aiming to highlight any regulatory barriers to the safe use of innovative vehicles and motorised mobility devices across Australia, is welcome. Properly used, innovative vehicles and motorised mobility devices offer a public benefit. Improper use, and inconsistencies between jurisdictions, contribute to the hostility that these vehicles and devices can generate.

These innovative vehicles and the companies that operate them are backed by massive amounts of venture capital, and supported by huge public popularity. The Brisbane trial alone has seen claims of 100,000 users making 300,000 trips from mid-November 2018 to late January, 2019<sup>1</sup>. Governments will be no more successful in preventing the commercial operation of innovative vehicles than they were in preventing the unauthorised but overwhelmingly popular operation of Uber. Regulation of the industry and its vehicles is therefore the only practical response, as per the Uber experience.

Motorised mobility devices are essential to the lives of many Australians. In the case of motorised wheelchairs, users are completely dependent upon them for personal mobility in the public and private environment. Mobility scooters provide an essential aid for people unable to walk any significant distance. The primacy of the devices in the lives of people who depend upon them, and their rights in the public space, must be recognised. So too, must the users of either type of device be recognised as forming almost completely distinct populations. A user of one type of device is highly unlike to ever concurrently use the other. Rather any overlap in use would be at a time when a person was transitioning from scooter to wheelchair.

<sup>&</sup>lt;sup>1</sup> <u>https://theconversation.com/limes-not-lemons-lessons-from-australias-first-e-scooter-sharing-trial-108924</u>

#### Contents

1. What characteristics need to be considered when defining what an innovative vehicle is?2
2. What differences between motorised wheelchairs and mobility scooters need to be recognised by this project?
3. What uses of innovative vehicles need to be considered as part of this investigation?
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?
5. What are the practical and measurable outcomes required from a nationally-consistent policy and regulatory framework for innovative vehicles?
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?
7. What barriers and health or safety risks are associated with the use of a motorised mobility device that does not meet the needs of a user because of the current restrictions?
8. How do current classifications of drivers of wheelchairs as both 'pedestrians' and 'vehicles' in the Australian Road Rules create confusion?
9. Is there a need for construction and performance requirements for motorised mobility devices to ensure safe use on public transport infrastructure?
10. What evidence is available on the road safety risks associated with motorised mobility devices that could be used to inform the way motorised mobility devices are regulated?

The questions posed in the *Barriers to the safe use of innovative vehicles and motorised mobility devices* Issues Paper are addressed below.

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

Is the vehicle an essential life support (indispensable aid) or is it a life enhancer (mobility convenience / recreational vehicle)? If the latter, then it is reasonably described as an innovative vehicle.

Innovative vehicle users have the choice to ride the innovative vehicle or not. They are not dependent on it for essential personal mobility. Users of motorised mobility devices are wholly or partly dependent on their device for essential personal mobility.

Queensland and no doubt other jurisdictions define what they consider to be acceptable dimensions and use of innovative vehicles<sup>2</sup>.

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

Motorised wheelchairs and their users should be viewed and referred to as distinct from mobility scooters and their users.

The users of motorised wheelchairs form a demographic almost wholly separate to the users of mobility scooters. Very seldom will there be an overlap of these sets of people. Users of mobility scooters may transition to motorised wheelchairs as their health / mobility deteriorates, and it is at this point of transition that a small subset may fall into both data sets.

Motorised wheelchairs are the sole means of personal mobility for people completely or almost completely unable to walk in public and private space.

Mobility scooters are a means of enhancing or restoring mobility in public space (and sometimes private space) for people whose ability to walk any significant distance is limited by a medical condition.

Motorised wheelchairs are far more stable than mobility scooters, have a much smaller turning circle, are controlled by joystick rather than handlebar mounted controls and have restraint attachment points for when travelling in a wheelchair accessible taxi.

By contrast, mobility scooters have a high centre of gravity, the turning circle of a small motor scooter (such as a Vesper) due to their relatively long wheelbase, are steered by handle bars and lack any attachment points for restraints when travelling in a wheelchair accessible taxi.

Usually, motorised wheelchairs are selected and often customised for the user under the supervision of a medical professional. They are almost always prohibitively expensive to purchase and it is usual for users to receive subsidy or outright purchase by a third party when acquiring their wheelchair. Users transfer into and out of their wheelchairs either with the direct assistance of a support worker or with the aid of a hoist operated by a support worker.

Mobility scooters are more often an 'off-the-shelf' purchase by an individual, though a medical professional may be involved in the selection of the unit. They are far cheaper than motorised wheelchairs in most

<sup>&</sup>lt;sup>2</sup> <u>https://www.qld.gov.au/transport/safety/rules/wheeled-devices/personal-mobility-devices</u>

instances, hence their popularity. They are also designed to be independently stepped into and out of by the user.

With the clear distinction between populations and devices, it would be better to always refer to the motorised wheelchairs and mobility scooters separately rather than lumping them under the descriptor of `motorised mobility devices'.

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

Uses of innovative vehicles range from recreational to short transit (e.g. 'last mile'). The ARRs should provide a template that allows for as much innovation as can be safely accommodated in the various pedestrian and road environments.

The commercial providers of innovative vehicles may not always seek permission to launch their services. Apart from the public embrace of the vehicles, this cavalier approach is aided in no small way by the regulatory disparities between jurisdictions and in many instance the regulatory vacuum in all jurisdictions. Seizing the regulatory initiative through consistent and consistently enforced regulations allows for the entry of new operators, safe operation of vehicles, and public confidence in the pedestrian and road environment.

# 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?

**Parking.** Companies such as Limes have parking policies<sup>3</sup> that hirers are expected to follow in order to prevent scooters becoming hazards or nuisances. These policies are quite responsible, but unenforceable. They are also incomplete, with nothing covering the obstruction of TGSI trails or 'shorelines' used by vision impaired pedestrians for example. Currently, the owners of the innovative vehicles are responsible for moving inappropriately parked scooters. The various States should also empower local authorities to impound innovative vehicles at the owners' expense.

The following photographs illustrate the parking practices of Limes' customers. Some are quite responsible, such as those that place scooters to kerbside in 'no standing' zones. Others obstruct commercial activity or public walkways. Those that interrupt TGSI networks ('Braille trails') pose a particular hazard for pedestrians who have a vision impairment.

<sup>&</sup>lt;sup>3</sup> <u>https://youtu.be/Qb2s8A1KnRQ</u>

Any regulations should clearly identify where on footpaths and public spaces it is acceptable to park innovative vehicles and which areas are not permitted. Penalties should apply to incorrectly parked vehicles.

Designated parking areas for dockless innovative vehicles should be mandated in high pedestrian traffic CBD areas. These can be geocoded so that innovative vehicles left outside these areas are unable to be switched off and therefore continue to charge the rider.



Limes scooter obstructing ramp, Newstead.



Limes scooters adjacent to TGSI wayfinding trail and in a public square, Reddacliff Place.



Limes scooters blocking access to pedestrian crossing signal control, Ann St.



Limes scooters adjacent to public seating, George St.



Limes scooter located behind blade sign, Reddacliff Place.





**Speed.** Motorised mobility devices are limited to 10kph nationally. This speed should be considered as a maximum for innovative vehicles when they are travelling in crowded pedestrian areas such as CBD footpaths and pedestrianised areas. On commuter cycleways and other spaces with few or any pedestrians much higher speeds are appropriate. Motor vehicle speeds are regulated according to road type and the same should be considered for scooters.

Many e-scooters and other innovative vehicles are capable of exceeding 20kph. Queensland permits speeds of up to 25 kph<sup>4</sup>. From the rider's perspective this speed probably adds to the pleasure of the ride. Pedestrians may have other views, particularly if involved in a collision or near miss with a 70kg rider travelling at 15-25 kph.

**Size and mass.** At a certain size, innovative vehicles transition to motor vehicles (which will be increasingly powered by electricity). As size and mass of innovative vehicles increase the potential for hazard and nuisance also increases. Queensland has mandated size and weight limits<sup>5</sup> and these might serve as the starting points for discussions on nationally consistent regulations.

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

The ARR should have regulations covering innovative vehicles that can be used as a template by the State jurisdictions. Without this agreed position the States will go their own way with often quite disparate

<sup>&</sup>lt;sup>4</sup> <u>https://www.qld.gov.au/transport/safety/rules/wheeled-devices/personal-mobility-devices</u>

<sup>&</sup>lt;sup>5</sup> <u>https://www.qld.gov.au/transport/safety/rules/wheeled-devices/personal-mobility-devices</u>

requirements. Queensland has just published rules for the use of 'personal mobility devices'<sup>6</sup> and no doubt other States will follow or have already formulated their own rules. A national approach is required that harmonises the jurisdictions' rules for innovative vehicles.

Commercially operated innovative vehicles should be registered so that their overall numbers, and the service history of each vehicle is known. Registration should be nationally consistent, with an agreed definition of each vehicle type.

Measurable outcomes will be achieved through nationally consistent data capture of injuries and incidents involving innovative vehicles. A surfeit of anecdotal evidence exists, but this is a poor platform for the development of policy as it will be coloured by the perceptions and interests of the observer. If an accident / incident data collection template were developed as part of the current process the many jurisdictions could begin to record data that would inform an accurate national picture of the impact of innovative vehicles.

Overseas, various jurisdiction have sought to regulate the use of innovative vehicles. A recent article in The Conversation<sup>7</sup> detailed:

North American cities are introducing various regulatory systems. These include:

- permits (often awarded via tender)
- maximum fleet sizes
- vehicle regulations especially maximum speeds
- go/no-go zones
- parking controls
- high fees to pick up and impound scooters that operators fail to collect.

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?

**Impact on pedestrians subjected to near miss incidents.** People who have sensory impairments, particularly of sight and hearing, have complained about being startled by passing e-scooter riders. Injuries

<sup>&</sup>lt;sup>6</sup> <u>https://www.qld.gov.au/transport/safety/rules/wheeled-devices/personal-mobility-devices</u>

<sup>&</sup>lt;sup>7</sup> <u>https://theconversation.com/limes-not-lemons-lessons-from-australias-first-e-scooter-sharing-trial-108924</u>

resulting from falls associated with being startled have been reported<sup>8</sup>. Acceptable passing speeds and distances need to be formulated.

**Rider negligence.** There is a body of anecdotal evidence, mostly reported in the press<sup>9</sup>,<sup>10</sup>,<sup>11</sup>, that e-scooter use is not without risk of serious injury. The emerging picture appears to indicate that e-scooter accidents are mostly due to misuse of the scooter and / or failure to wear a helmet<sup>12</sup>. Risk reduction should involve determining appropriate safety wear and what constitutes a fit and proper state in which to travel.

Dockless e-scooters can pose a tripping hazard for people who have vision impairments if they are left in inappropriate locations. Clear, enforceable regulations on what constitutes an appropriate location for leaving a scooter should be developed.

**Rider competence.** No training or competency testing is required to hire an e-scooter. Riders no doubt gain in experience and confidence with each ride, but their initial rides may put them and other members of the public at greater than average risk. Some form of mandatory competence training should precede a rider being granted access to the hire of an e-scooter.

The question of physical capacity to safely use a device should be explored. For example, what should the minimum level of visual acuity be for an e-scooter rider? Should a person with a balance or cognitive impairment be permitted to ride an e-scooter? These are difficult questions to answer, but should be considered nevertheless.

## 7. What barriers and health or safety risks are associated with the use of a motorised mobility device that does not meet the needs of a user because of the current restrictions?

**Weight of motorised mobility devices.** The *Disability Standards for Accessible Transport* (DSAPT) *Guidelines*<sup>13</sup> do not place a limit on the tare weight of the motorised mobility device. Rather, in *Part 40.1 Criteria for* 

<sup>&</sup>lt;sup>8</sup> <u>https://www.brisbanetimes.com.au/politics/queensland/fractures-and-head-injuries-scooter-crashes-becoming-a-regular-occurrence-20190120-p50shv.html</u>

<sup>&</sup>lt;sup>9</sup> <u>https://www.cnet.com/news/electric-scooters-by-bird-and-lime-are-causing-injuries-and-accidents/</u>

<sup>&</sup>lt;sup>10</sup> <u>https://www.couriermail.com.au/news/queensland/people-have-started-having-more-scooter-accidents/news-story/72bdf32cf9df485e8eb1563fab961157</u>

<sup>&</sup>lt;sup>11</sup> <u>https://www.consumeraffairs.com/news/electric-scooter-related-accidents-are-on-a-meteoric-rise-092518.html</u>

<sup>&</sup>lt;sup>12</sup> <u>https://www.brisbanetimes.com.au/politics/queensland/fractures-and-head-injuries-scooter-crashes-becoming-a-regular-occurrence-20190120-p50shv.html</u>

<sup>&</sup>lt;sup>13</sup> <u>https://www.legislation.gov.au/Details/F2005B01059/0d42e6f5-72ea-406a-a9ac-b311077b840c</u>

*mobility aids in Disability Standards* the limit is placed on the combined weight of the device and occupant:

The total weight to be supported by a boarding device needs to be not more than 300  $\mbox{kg}$ 

The 110 – 150 kg tare weight limit imposed on motorised mobility devices by various state authorities conflicts with the *Disability Standards for Accessible Public Transport 2002*<sup>14</sup> (DSAPT) assumption of <300 kg combined mass.

Some people are very small, for example people who have *Osteogenesis imperfecta*, but they require quite large wheelchairs. These wheelchairs are usually custom modified to suit the occupant under the direction of a health professional.

If a 30 kg person using a 120 kg wheelchair (combined mass 150 kg) wished to board or alight from a public transport conveyance they would be at liberty to do so, and indeed have a right under the Disability Discrimination Act 1992 to do so. Under ARR 288(3) though, they could not lawfully travel to or from the boarding point.

A 140 kg person in a 110 kg wheelchair (combined mass 250 kg) could both board and alight and travel to and from the boarding point. Arguably, being struck by a mass of 250 kg moving at 10kph would inflict more damage than being stuck by a mass of 150 kg moving at 10kph.

The ARR must conform to the DSAPT principle of regarding wheelchair and occupant as a single unit when it comes to assessing masses acceptable for use in public space.

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

They do so by separating the 'driver' from the 'vehicle' and considering only the 'vehicle' when formulating regulations. The two must be considered as one, as neither will be in public without the other. Users should be able to register their wheelchair free as per Queensland, but in the public space the person and the wheelchair must be treated as a pedestrian.

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

**Public space and buildings.** The question around the performance of motorised mobility devices on uneven surfaces begs the further question

<sup>&</sup>lt;sup>14</sup> <u>https://www.legislation.gov.au/Details/F2011C00213</u>

of why the authority responsible for the surface would allow a paved area to remain in an unsafe condition? Motorised mobility devices should not be regulated or tagged in order to compensate for poor maintenance or construction.

Few motorised mobility devices are suitable for use on unpaved surfaces. This should be made clear at time of purchase.

**Public transport infrastructure.** Public transport infrastructure is a varied environment and any construction and performance requirements for motorised mobility devices would need to accommodate this variability. The DSAPT assumes that mobility aids suitable for use in public transport will conform to certain dimensional and performance requirements. These are articulated in the DSAPT Guidelines and also in material put out by State transport authorities<sup>15</sup>.

It is probably not possible to identify a motorised mobility device that is 100% suitable for the public transport infrastructure environment. While new assets should be accessible to any motorised mobility aid having dimensions and performance that fall within the DSAPT Guidelines, older assets may not have circulation space suitable for many motorised mobility aids. Upgrades to these non-compliant assets may not be structurally feasible. In which case it is the assets that are at fault rather than the motorised mobility devices attempting to access them. These assets should be publically flagged as not accessible or only partly accessible.

**Behaviour of scooter users.** Expected behaviour of scooter users in the public transport environment might be based on the AHRC's 2014 *Advisory Note on Mobility Scooters in Registered Clubs*<sup>16</sup>. This advisory note promotes quite reasonable expectations of scooter users if they are in registered clubs. They could easily be extrapolated to the public transport environment.

**Conveyance manoeuvring space varies between modalities.** Public transport conveyances of varying modalities also present significant variance in the amount of on-board circulation space available. Any construction and performance requirements for motorised mobility devices would need to accommodate this on-board variability.

For example, while boarding a bus a person on a scooter may not be able to turn through the wheel arches, and even if they succeed they may not be able to manoeuvre into an allocated space. The same scooter might

<sup>&</sup>lt;sup>15</sup> <u>https://www.tmr.qld.gov.au/Travel-and-transport/Disability-access-and-mobility/Travelling-with-a-wheelchair-or-mobility-scooter.aspx</u>
<sup>16</sup> <u>https://www.humaprights.gov.au/our\_work/disability\_rights/projects/mobility-access-and-mobility-scooter.aspx</u>

<sup>&</sup>lt;sup>16</sup> <u>https://www.humanrights.gov.au/our-work/disability-rights/projects/mobility-</u> <u>scooters-registered-clubs</u>

easily achieve entry into a rail car and then be easily positioned into an allocated space. A scooter deemed unsuitable for a bus may be quite suitable for a train, and a scooter deemed suitable for a train might be unsuitable for a bus.

Any scheme to tag motorised mobility devices as suitable for use on public must stipulate the modalities for which the device is not suitable. It would be most inappropriate to preclude a suitable scooter from trains and ferries simply because it cannot board a bus.

**Forces experienced during conveyance motion.** Conveyances in motion impose forces on mobility devices that are absent in the pedestrian environment. Buses, trams, trains, ferries and so on all have their own unique forces while in motion. The DSAPT recognises this and requires in Part 9.11 that some types of conveyance constrain the movement of mobility aids that are in allocated spaces:

Section 9.11

#### 9.11 Movement of mobility aid in allocated space

An allocated space must contain movement of a mobility aid towards the front or sides of a conveyance.

#### Conveyances

- Buses
   except dedicated
   school buses
- Trams
- Light rail

Little effort has been made to comply with this Part, which begs the question: Are motorised mobility devices to be held responsible for accidents that result from transport providers' failure to comply with DSAPT? In this instance, it would be unreasonable to overly regulate motorised mobility devices, or tag them as unsuitable for public transport, in order to compensate for a DSAPT regulatory failure by transport providers.

Likewise, it would be unreasonable to regulate motorised mobility devices according to their performance in buildings that are not compliant with the Premises Standards.

## 10. What evidence is available on the road safety risks associated with motorised mobility devices that could be used to inform the way motorised mobility devices are regulated?

The evidence of the risks associated with motorised mobility devices is the lack of evidence. Very few people are killed or injured by motorised mobility devices<sup>17</sup>. Motorised mobility devices can be, and are, used inappropriately, but their risk appears to be more of a nuisance than a danger. A national database of accidents involving motorised mobility devices, and the circumstances in which they occur, would be very useful.

Rather than regulating the motorised mobility devices too strictly it may be better to more strictly regulate the built environment. It is accepted that Motorised mobility devices must be safe and fit for purpose, but so must the pedestrian environment. People responsibly using mechanically sound, fit for purpose mobility devices are at risk if the pedestrian environment is hazardous.

17

https://www.accc.gov.au/system/files/Help%20cut%20mobility%20scooter%20accident s%20-%20v2.pdf