

REGULATION OF E-SCOOTERS IN SOUTH-AFRICA

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ABSTRACT

The introduction of micromobility modes, and specifically e-scooters, in many parts of the world have resulted in public complaints and road safety concerns. A central contributor to these challenges is the lack of clear regulation by relevant transport legislation. Consequently, transport authorities have been largely trying to regulate e-scooters retrospectively, resulting in their uncontrolled use in public areas. South-Africa is facing a similar dilemma, with the primary piece of transport legislation, the National Roads Traffic Act 93 of 1996, lacking practical definitions and regulations to provide a basis for the further development of guidelines and policy pertaining to e-scooter usage. This paper explores the current provisions of transport legislation in the South-African context and identifies certain shortcomings. The impact of these shortcomings is explained with reference to implementation strategies and current guidelines, such as the SARTSM manuals. Recent legislative amendments which regulate e-scooter use on public roads in the United Kingdom provides a comparative basis for recommendations in the South African context.

1. INTRODUCTION

Micromobility, and electric scooters (“e-scooters”) in particular, are experiencing a surge in new users on an international scale. Research suggests that this new mode of urban mobility is substituting vehicle trips (Christoforou, Gioldasis, de Bortoli & Seidowsky, 2021) and can potentially alleviate congestion, reduce equivalent CO₂ emissions of cars (Edel, Wassmer & Kern, 2021) and provide improved integration with public transport (Fearnley, Johnsson & Berge, 2020). These factors are highly attractive, not only to the user, but to transport authorities as a method to address shortcomings in public transport and bolster underperforming public transport schemes.

However, the large scale introduction of e-scooters in cities in other parts of the world has resulted in public complaints, safety concerns and regulatory challenges. Investigating 173 sources of news items, for example (Gössling, 2020), concluded in his study that e-scooters create conflict over space, speed and safety and that authorities have often implemented e-scooter use without the proper consideration or policy for effective regulation. In other instances, city councils and transport professionals have been attempting to regulate the use of e-scooters retrospectively and city pilot projects have become common practice as a first step before deploying new shared-mode programmes. In some cities like Montreal, Miami and Toronto these programmes have been suspended or rejected due to regulatory and safety concerns. South Africa is facing the same dilemma with e-scooters being observed on public roads and commercial e-scooter offerings starting to take place despite the lack in regulations. The absence of clear transport legislation pertaining to e-scooter usage is creating a challenge for local authorities to effectively regulate and provide implementation strategies. The development of effective

regulations can only take place once provision is made for the use of e-scooters in the relevant transport legislation. The development of these regulations is of utmost importance to provide e-scooter and other road users sharing the public right-of-way, a safe space to travel. Promoting road safety should be at the core when legislation and regulations are developed and key factors such as speed and space allocation must be addressed.

Against this background, the aim of the paper is to explore transport legislation, and the lack thereof, pertaining to e-scooter use on South African public roads. The identified shortcomings are considered in light of equivalent transport legislation in the United Kingdom and New Zealand as comparison, where e-scooters are already widely implemented on public roads. Establishing the legislative base will provide an opportunity for transport professionals and authorities to address and develop further guidelines for e-scooter use in South-Africa which will need to, among other, address speed management, space allocation, parking, insurance, liability, safety and commercial offerings. This paper is an initial investigation into the status quo and shortcomings of transport legislation related to e-scooter use to establish the legislative base and not an in-depth analysis of the aforementioned operational issues.

2. DEFINITION AND DESCRIPTION

2.1 Micromobility

Micromobility is a collective term for micro-vehicles being used as a mode of transport to provide personal mobility solutions. The International Transport Forum (ITF) has adopted the following definition in their *Safe Mobility* report, “micromobility is the use of micro-vehicles: vehicles with a mass of no more than 350 kilograms (771 pounds) and a design speed no higher than 45 km/h” (International Transport Forum, 2020). The definition allows for micro-vehicles that are powered with or without the assistance of an electric motor. However, the proposed weight and speed limits still allow for a large range of micro-vehicles that will have different infrastructure and regulation requirements. The ITF has proposed four subclasses for micro-vehicles. These different categories may require different regulations and the parameters defining each sub-class should be carefully considered. The main classification factors are the maximum speeds micro-vehicles can achieve, with Type A and B allowing speed up to 25 km/h and Type C and D considering speeds between 25 km/h and 45 km/h (International Transport Forum, 2020). The two speed categories are further divided between vehicle weight up to 35 kg, and between 35 kg to 350 kg (International Transport Forum, 2020). Figure 1 indicates an overview of the proposed classifications with typical examples for each class. It is important to note that a micro-mobility vehicle can be classified in more than one category based on the performance output of the specific model.

Type A	Type B	Type C	Type D
unpowered or powered up to 25 km/h (16 mph)		powered with top speed between 25-45 km/h (16-28 mph)	
<35 kg (77 lb)	35 – 350 kg (77 – 770 lb)	<35 kg (77 lb)	35 – 350 kg (77 – 770 lb)

Figure 1: Proposed micro-vehicle classification from the ITF's Safe Mobility report

2.2 Electric Scooter (E-Scooter)

E-scooters are described as a stand-up or seated street vehicle with a handlebar, deck and wheels propelled by an electric motor (International Transport Forum, 2020). There are various e-scooters available and typical performance outputs will place them within Type A or Type C of the ITF classification system represented in Figure 1, i.e. weighing < 35 kg with speeds varying up to 45 km/h.



Figure 2: Typical e-scooter (lime)

3. LEGISLATIVE CONSIDERATIONS

3.1 National Road Traffic Act 93 of 1996

The National Road Traffic Act (NRTA) provides for road traffic matters on a national level in South Africa and is therefore applicable to the entire country. The matters regulated by the NRTA include the registration and licencing of motor vehicles, fitness of drivers and vehicles, road safety, road traffic signs and the general speed limit. In terms of section 75 of the NRTA the Minister of Transport may make regulations relating to road traffic matters and these regulations typically deal with matters of a technical nature (Hooctor, 2008).

For purposes of this paper it is important to note that the NRTA does not contain a definition for e-scooters. E-scooters are therefore categorised under the broad definition of a motor vehicle, and further, technically fit within the ambit of the definition of a motor cycle. A 'motor vehicle' is defined in section 1 of the NRTA as:

“any self-propelled vehicle and includes-

- (a) a trailer; and*
- (b) a vehicle having pedals and an engine or an electric motor as an integral part thereof or attached thereto and which is designed or adapted to be propelled by means of such pedals, engine or motor, or both such pedals and engine or motor, but does not include -*
 - (i) any vehicle propelled by electrical power derived from storage batteries and which is controlled by a pedestrian; or*

- (ii) *any vehicle with a mass not exceeding 230 kilograms and specially designed and constructed, and not merely adapted, for the use of any person suffering from some physical defect or disability and used solely by such person*”

Section 1 of the NRTA furthermore defines a ‘motor cycle’ as “*a motor vehicle which has two wheels and includes any such vehicle having a sidecar attached*”.

An e-scooter is self-propelled and is not excluded in terms of b(i) & b(ii) of the definition. This reveals a shortcoming in the national legislation in respect to the categorisation of e-scooters. The mere size, power output and speed of e-scooters cannot be compared to those of a car or motorcycle. This reveals that at the time the NRTA was promulgated, e-scooters were not considered a formal transport mode. The need for a clear definition of e-scooters in road traffic legislation is twofold. Firstly, the lack of a clear definition for e-scooters creates confusion regarding the legality of its use on public roads. Secondly, where e-scooters fall within the definition of a motor cycle, there are extensive regulatory requirements that they have to adhere to, which are not necessarily applicable to or practical for e-scooters. For example, e-scooters (considered within the definition of a motorcycle) would currently require a roadworthy certificate in terms of section 42 of the NRTA, but no guideline exists for the evaluation thereof. There are extensive differences between e-scooters and motor vehicles. As such, the current legislation does not provide for the effective identification and regulation of these devices.

3.2 National Road Traffic Amendment Bill 2020

The National Road Traffic Amendment Bill, 2020, has been proposed although not yet adopted. The Bill proposes to amend the definition of a ‘motor vehicle’ to include propulsion by an electric motor but excludes a “*power assisted pedal cycle, having pedals and an engine or electrical motor as an integral part thereof, with a maximum mass of 30 kilograms and a design speed not exceeding 25 kilometres per hour that complies with the prescribed requirements for power assisted pedal cycles*”. The ‘prescribed requirements’ referred to in the definition is, however, not yet set, and should follow the adoption of the proposed Bill in a revision to the National Road Traffic Act Regulations. The existing definition of a pedal cycle will also be amended to add a variation to the standard pedal cycle, namely “*a power assisted pedal cycle, as contemplated in subparagraph (iii) of the definition of motor vehicle*”. The aforementioned amendments to the National Road Traffic Act, 1996 would allow electric bicycles to be legally operated on public roads, subject to the specified weight and speed limitations. This will be the first legally operated electric powered micromobility mode on public roads in South Africa. The Bill further provides an exclusion to the definition of motor vehicle for “*a vehicle that has maximum design speed of 45 kilometres per hour that complies with the prescribed requirements for environmentally friendly vehicles*”. The definition, however, of an ‘*environmentally friendly vehicle*’ is not precise and as a result the vehicle type earmarked to be regulated by the clause is unclear. Caution should be taken to not mislead the environmental effect of vehicles included in the definition, as there are still varying viewpoints on the environmental impact of some electrical devices. For example, e-scooters might as well be considered environmentally friendly, but different viewpoints on this statement is provided through various scholarly research – specifically when taking into account the full life cycle of an e-scooter. The maximum design speed of 45km/h for environmentally friendly vehicles exclude typical passenger vehicles and is more likely to be aimed at micro-vehicles. If the latter shows to be true, which could possibly include e-scooters, it is proposed that the collective term of ‘*environmentally friendly vehicles*’ rather be replaced by a more neutral term, such as Low-powered Vehicles, which is also used in New

Zealand guideline documents. Further discussion in this paper referring to the proposed amendment Bill will use the term environmentally friendly vehicles to keep the reference accurate, although the arguments will be the same for the proposed term of low-powered vehicles.

The proposed amendment by the Bill in the current format does not extend specifically to e-scooters and the lack of a legally accepted definition continues to be a shortcoming in the NRTA and its Regulations.

3.3 National Road Traffic Act Regulations, 2000 (Amended 11 Feb 2022)

The National Road Traffic Act Regulations (NRTAR) are issued in terms of the National Road Traffic Act (NRTA). The NRTA Regulations determine the rules related to licencing, vehicle standards, rules of the road and road signage. The aforementioned rules are often based on the definitions of vehicles contained in the NRTA, and without clarity on the definition and classification of e-scooters, the application of the Regulations in relation to e-scooters is uncertain.

For example, the classification of e-scooters as a vehicle (motor cycle) means that item 99(4) (a) of the regulations are applicable – this would require riders to have a code A1 driving licence - whereas users of pedal cycles are exempted from needing a driving licence. A further example of vehicle performance uncertainties may be demonstrated by the regulation of brakes. Item 150 of the NRTA Regulations requires motorcycles to be fitted with two independent braking systems whereas pedal cycles only require one brake fitted on the rear wheel in terms of item 152. It is clear that, even if e-scooters are excluded from the definition of a motor vehicle, as is the case with pedal cycles and the proposed amendment pertaining to power assisted pedal cycles, regulations such as braking requirements need to be supplemented to include e-scooters. Currently e-scooters do not meet the requirements in Parts II, III and IV of Chapter IV of the NRTA Regulations, and are therefore not legally allowed to operate on public roads. However, regulations pertaining to pedal cycles, which are not considered a motor vehicle in terms of the NRTA, are much less stringent. A similar definition for e-scooters and clarity on *environmentally friendly vehicles* should be included in the NRTA to regulate the use of e-scooters on public roads.






Items 284 (c) (i) & (ii) of the NRTA Regulations prescribe the display of road signs and road signals in accordance with the Southern African Development Community Road Traffic Signs Manual (SADC-RTSM) Volume I and IV, and the South African Road Traffic Signs Manual (SARTSM) Volume II and III. The aforementioned manuals have legal status and the definitions for road signs and markings are detailed. Again, the uncertainty pertaining to where e-scooters fit into the current regulation will result in confusion in terms of the appropriate road signage. This is because the available road traffic signs manuals provide for different classes of vehicles (buses, cars, minibus-taxis etc.), bicycles (pedal cycles) and pedestrians. E-scooters are not included in any of the classes. It is expected that e-scooters will, at least partly, make use of cycling infrastructure. The manuals are clear in respect of the use of cycling infrastructure and without amendments to the permitted vehicle classes or additions to the available road signs inventory e-scooters will not be legally permitted to use the infrastructure.

Considering the expectation for e-scooters to share infrastructure with pedal cycles, especially in instances where pedal cycle signage may become applicable to e-scooters, it is important to note the existing provisions. In terms of item 311 of the NRTA Regulations

pedal cycles are allowed to be used on public roads subject to certain provisions such as riding in a single file and not swerving while riding. Considering riding location, the Regulation stipulates that pedal cycles shall not use any other portion of a public road when a specific portion is set aside for use by pedal cycles, for example a cycle lane reserved with applicable signage. Where a portion of the road is not specifically reserved for pedal cycles, other portions of a public road may be used such as the roadway itself or road shoulders. Cycling is not permitted on portions indicated with relevant signage or, in terms of item 323 of the Regulations, on freeways.

A number of examples of pedal cycle related signage that will require amendments to the regulations to regulate other low-powered vehicles are indicated in Table 1. For the examples indicated, the description of the signs clearly refer to pedal cycles and will require an amendment to include modes such as e-scooters. In the case of electric bicycles, the proposed amendment to the definition of pedal cycle includes power assisted pedal cycles as discussed in section 3.2 of this document and the provisions of SADC-RTSM and SARTSM will, therefore, not require any changes.

Table 1: Regulatory signage relating to pedal cycles in South Africa

Sign Description	Sign Symbol	Sign Meaning as per NRTAR
R111 – Pedal cycles only		<i>“Indicates that the public road or a portion of the public road is set aside for use by pedal cyclists and that a pedal cyclist shall only use such public road or portion of such public road.”</i>
R112 – Pedal cycles and pedestrians only		<i>“Indicates that the public road or a portion of the public road is set aside for use by pedal cyclists and pedestrians, and that pedal cyclists and pedestrians shall only use such public road or portion of such public road.”</i>
R219 – Pedal cycle prohibited		<i>“Indicates to a pedal cyclist that he or she shall not proceed beyond such sign.”</i>
R304 – Pedal cycle lane reservation		<i>“Indicates to the driver of a vehicle that the portion of the public road is a pedal cycle lane and is reserved for pedal cycles only.”</i>
R304-P – Pedal cycle parking reservation		<i>“Indicates to the driver of a vehicle that a parking area is reserved for pedal cycles only.”</i>

4. COMPARATIVE CASES

4.1 United Kingdom

Traffic legislation in the United Kingdom (UK) recently started to regulate e-scooters in order for this transport mode to legally operate on public roads. E-scooters are classified under the legal definition of a motor vehicle in section 185(1) of the Road Traffic Act, 1988 and are therefore, required to meet all regulations pertaining to motor vehicles, including technical standards, licencing and registration as well as driver testing and licencing.

E-scooters and users often have not met these requirements in the past, and have consequently been considered illegal on public roads. These challenges are similar for e-scooters in South-Africa in respect to their legal operation on public roads.

A fast growing micro-mobility sector in the UK, including e-scooters, revealed potential benefits to the transport system if they were to be formally included, and the Department of Transport initiated an investigation into more effective ways of legalising these types of vehicles. In order to mitigate risks of a blanket legislative amendment, the Department opted to revise legislation to allow for e-scooters that are used as part of formalised e-scooter trials hosted by private companies. The e-scooter trials in the current format are considered a temporary arrangement and a formal evaluation of the impact of e-scooters was released in December 2022. The evaluation report discusses trip details, user demographics, safety aspects, social and environmental impacts and general lessons learned from the trials (Arup, 2022). Based on the outcomes and recommendations of the evaluation report, permanent legislation and regulations might be considered. The review of the findings is currently in progress and future e-scooter policy will follow. An advantage of the legislation based on only e-scooters used in a trial is that, if the findings in the report is considered negative, the trials can be halted without legislative provisions still in place for general e-scooter use. If the findings are considered positive the legislative texts will require amendment to omit the reference to e-scooters only participating in a trial, and would need to include all e-scooters (private and shared services) or only shared services.

To address the shortcomings of previous legislation, The Electric Scooter Trials and Traffic Signs (Coronavirus) Regulations and General Direction, 2020 was issued. Broadly, the amendments include the following:

- *Amendment of the Road Vehicle (Registration and Licensing) Regulations, 2002*
Electrically assisted pedal cycles are not considered a motor vehicle and are exempted from the regulations. This is a similar position to that of South African legislation if the amendments to the definition of pedal cycle and motor vehicles in the proposed National Road Traffic Amendment Bill 2020 come into effect.

The regulation of e-scooters used in a trial is included as an additional exempted class similar to that of electrically assisted pedal cycles. E-scooters are further defined in section 33 and listed as a “nil licence vehicle”. The effect of the Regulations are that it enables e-scooters to be used as part of a trial to operate legally without all of the vehicle licencing requirements and technical specifications that accompanies it.

- *Amendment of the Motor Cycles (Protective Helmets) Regulations, 1998*
The amendments to the regulations permit e-scooter riders to operate without using a motor cycle helmet.
- *Amendment of the Motor Vehicles (Driving Licences) Regulations, 1999*
The regulations did not waive driver licencing requirements for e-scooter riders, but defined the acceptable licencing categories that may use an e-scooter and further allowed for provisional driving licences to be issued that may be used to operate an e-scooter as part of a trial. E-scooters are classified as a category Q vehicle which will require a category Q entitlement on a full or provisional licence. Category AB (mopeds), A (motorcycles) and B (cars) driving licences include a category Q entitlement and a holder of these categories will be able to drive e-scooters. A provisional licence is similar to that of a learners licence in South Africa, with some

additional limitations such as restrictions to drive a vehicle on motorways. A person must be at least 15 years and 9 months to apply for a provisional licence in the UK.

➤ *Amendment of the Traffic Signs Regulations, 2016*

The Traffic Signs Regulations, 2016 provide a sign table in Part 2 of Schedule 3 in which regulatory road signage are indicated and described. The amendments to the regulations supplemented the description of road signs and markings that regulate cyclists, with a description for e-scooters used as part of a trial. The effect thereof is that the typical pedal cycle signage are applicable to e-scooters as well. For example, item 28 has reference to diagram 955 which indicates a route for use by pedal cycles only (similar to R111 in South Africa). The amendment to add “*and electric scooters being used in a trial,*” after pedal cycle means that the route will be available to both pedal cycles and e-scooters taking part in a trial. Although the signage still depicts a typical bicycle, the legal uncertainty is addressed by the amendment and the practical advantage is that existing signage need not be amended. The same strategy is used throughout the regulations to relevant signs, markings and crossing areas. It should be noted that trial regulations do not allow for e-scooters to be used on motorways or pavements (sidewalks).

E-scooters are defined throughout the Regulations as follow:

“electric scooter” means a vehicle which:

- (a) is fitted with an electric motor with a maximum continuous power rating not exceeding 500 watts;
- (b) is not fitted with pedals that are capable of propelling the vehicle;
- (c) has two wheels, one front and one rear, aligned along the direction of travel;
- (d) is designed to carry no more than one person;
- (e) has a maximum weight, excluding the driver, not exceeding 55 kgs;
- (f) has a maximum design speed not exceeding 15.5 miles per hour;
- (g) has a means of directional control through the use of handlebars which are mechanically linked to the steered wheel;
- (h) has a means of controlling the speed through hand controls; and
- (i) has a power control that defaults to the ‘off’ position.

4.2 New Zealand

Similar to South Africa and the UK, the definition of typical micromobility devices in New Zealand, such as e-scooters, were vague and resulted in e-scooters to be regulated in terms of motor vehicles. The collective term, “Low-powered Vehicles” (LPV’s), was provided by the New Zealand Transport Agency (NZTA) for a range of micromobility modes and is used as such in this section (NZ Transport Agency, 2023). LPV’s consist of two defined vehicle types; power-assisted cycles and wheeled recreational devices. The terms are defined as follow (NZ Ministry of Transport, 2022):

Power-assisted cycle means a cycle to which is attached 1 or more auxiliary propulsion motors that have a combined maximum power output not exceeding 300 W.

Wheeled recreational device:

- (a) means a vehicle that is a wheeled conveyance (other than a cycle that has a wheel diameter exceeding 355 mm) and that is propelled by human power or gravity; and

- (b) includes a conveyance to which are attached 1 or more auxiliary propulsion motors that have a combined maximum power output not exceeding 300 W.

E-scooters are considered as a LPV forming part of the definition for a wheeled recreational device.

Similar to South Africa and the UK, LPV's such as e-scooters were regulated as motor vehicles. This create problems in terms of vehicle standards, which is not practical or achievable for LPV's. In order to overcome this issue, New Zealand authorities declared certain LPV's not to be a Motor Vehicle in terms of Section 168A(2) of the Land Transport Act 1998. This provided exempted LPV's to be operated on public roads, under certain rules, without being subjected to stringent licencing and vehicle standards applicable to motor vehicles. Power-assisted Cycles, Yike Bikes and e-scooters are the LPV's to date declared not to be motor vehicles. In 2018, an e-scooter was declared not to be a motor vehicle with the following requirements:

- (a) The electric scooter is comprised primarily of a footboard, two or three wheels, and a long steering handle;
- (b) The electric scooter's wheels do not exceed 355mm in diameter;
- (c) The electric scooter has one or more electric auxiliary propulsion motors; and
- (d) The combined maximum power output of the electric auxiliary propulsion motors does not exceed 300 Watts.

E-scooters can be used in the roadway or on footpaths. When using an e-scooter on the road the driver must stay as close as practically possible to the left side of the road. When using an e-scooter on a footpath, riders must give way to pedestrians and mobility devices or operate at a speed that put other users at risk. E-scooters are not permitted to be used in designated cycle lanes. Further, the NZTA do not require the driver of a LPV to have a driver's licence or the vehicle to be licenced.

These are broadly defined regulation, but effective to provide the legislative base for implementation and development of e-scooters. Local councils have the means and power to further develop rules relating to operational issues such as speed management, helmet use and parking.

Currently, all other LPV's require the driver to be in possession of an appropriate driver's licence and the vehicle to meet the standard for the relevant vehicle class. These devices are therefore still difficult to regulate and cannot easily (if at all) operate legally on public roads.

5. DISCUSSION

This paper identifies that there are shortcomings in the current South African road and traffic legislation to practically accommodate e-scooters on public roads. Typical e-scooters are too far removed from the physical capabilities of motorcycles to practically regulate them as such, and while falling in the broad scope of the definition for motor vehicles, the regulation and conformance to requirements are impractical. Regulating e-scooters as a NMT mode, similar to pedal cycles, is more practical, but without the legislation describing it as such it remains an unregulated category. The New Zealand Road Agency followed a strategy to exempt certain low-powered vehicles from the definition of motor vehicles, with a direct declaration provided for in their Land Transport Act. This is not possible with the provisions in South African transport legislation. The

approach of legislators in the UK could well be applied to the South African context. The National Road Traffic Amendment Bill 2020 makes provision for the exclusion of electric bicycles from the definition of a motor vehicle, which is an effective way to exclude them from a number of regulations pertaining to licencing and technical requirements. Providing a clear definition for e-scooters, based on performance outputs and physical size, will allow regulation in the same proposed manner as e-bicycles. The unclear definition of environmentally friendly vehicles in the National Road Traffic Amendment Bill 2020 could effectively be used as a collective term for a range of micro-vehicles. It should be noted that the maximum speed allowed for these vehicles are currently set at 45km/h. In order to integrate devices such as e-scooters in a safe manner on shared paths with other NMT modes, the speed limit will need to be carefully considered to not create unsafe interactions between users. The use of a collective term in the NRTA definitions for a wider range of micro-vehicles will pave the way for similar devices, such as two-wheelers (Segway) and electric skateboards, to be adopted and regulated with a similar strategy as e-scooters. It is, however, important that the further regulation of '*environmentally friendly vehicles*' (or low-powered vehicles) will need to be included in the NRTAR to, among other, set speed and weight limits for different categories of micro-vehicles. In this regard, it will be important to adopt criteria for these categories, similar as those proposed by the International Transport Forum discussed in section 2 of this paper.

It was mentioned that the description and subsequent legal status of road markings and signs is not applicable to e-scooters. In this regard, UK regulations supplemented the description of pedal cycle related signage to include e-scooters (used in a trial). An obvious advantage of this approach is that existing signage does not have to be amended or supplemented, which reduces the logistical and financial burden on authorities. A detailed investigation is necessary to identify all relevant regulations and legislative provisions to regulate e-scooters. Only once national legislation is amended can the provisions be incorporated on a provincial and local (municipal) level.

Safety of road users should be prioritised once legislation is in place and regulations are developed. Without such regulations the industry is likely to develop according to market demand and individual user needs, which are not necessarily in the best interest of other road users. It is important that further regulation of '*environmentally friendly vehicles*' (or low-powered vehicles) will need to be included in the NRTAR to (among others) set speed and weight limits for different categories of micro-vehicles.

An observational study of e-scooters and other NMT users in Cape Town was conducted as part of an extended study to this paper. Findings from the observational study highlight the importance of safety oriented regulations. For example, the observations (n = 239) revealed that excessive e-scooter speed was a key factor associated with increased interactions between users sharing a space, specifically e-scooters and pedestrians. Together with speed, the weight of an e-scooter contributes to higher momentum and impact should a collision occur – all contributing to a greater risk for injury. Another early indication in the lack of regulatory guidelines was the observed helmet use of e-scooter riders. From the total study sample there were no riders wearing helmets. It should be noted that cyclists are currently required to use a helmet in terms of Regulation 207 of the NRTA and extending the requirement for e-scooters should be addressed. Regulating the allocated space for e-scooters should also be a key consideration for regulatory guidelines. For example, the physical design of e-scooters, specifically smaller wheels compared to for example bicycles, are more susceptible to uneven surfaces and mountable obstructions (kerbs, tree roots etc.) which are rather encountered on sidewalks opposed to asphalt roads/bike lanes. Higher pedestrian numbers on sidewalks also

revealed an increase in interactions between e-scooter riders and pedestrians during the observational study, leading to a higher risk for collisions.

Failing to address items in regulations that contribute to core safety principles could see the introduction of e-scooters fail as a result of negative public perception and other safety concerns.

6. CONCLUSION

The paper established that the National Road Traffic Act and Regulations do not currently make provision for e-scooters to be legally used on public roads in South-Africa. There are various shortcomings, including the provision of clear definitions relating to e-scooters and subsequent restrictions on the available road signs and markings used in the SARTSM manuals. The paper recommends that e-scooters require a clear definition in the NRTA in order to be properly regulated by legislation. This will provide the legislative platform at a national level for local by-laws and implementation strategies to develop. In light of the various types of micro-vehicles available on the market, it is recommended that e-scooters be included in a collective term for these vehicles, but regulations be further drawn up based on pre-defined categories primarily based on the vehicle speed and weight. For practical and administrative reasons, road signage and markings currently regulating pedal cycles should be extended to e-scooters, similar to the United Kingdom. Road safety must be the central theme when developing regulations and should be informed by findings from relevant studies and other literature.

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