Inquiry into e-mobility safety and use in Queensland

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SUBMISSION TO

Queensland Parliamentary Inquiry

on E-Mobility Safety and Use

E-Bike and E-Scooter Regulation in Queensland

Balancing Safety, Sustainability, and Smart Regulation

June 2025

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1. The author and Inquiry

The author of this submission is Adjunct Associate Professor Ray Bange OAM and the submission is made in a personal capacity. He resides in a coastal region that sees growing use of mobility-assisted personal transport on footpaths and roads with mixed usage by pedestrians and riders of all ages.

A retired civil engineer whose career began in the Queensland Main Roads Department more than 50 years ago, Professor Bange was the foundation head of the School of Civil Engineering at the QIT (now QUT). He has held many representative positions and policy roles including that of Queensland President of the Institution of Engineers.

Professor Bange's policy expertise is informed by extensive communication networks and continued professional engagement on regional and national policy issues. The input from his close relationship with community and advocacy bodies provides him with insights into issues that are in the public interest such as the use and regulation of e-bikes and e-scooters.

Appendix A sets out the terms of reference for this Inquiry. Views expressed are based on an evidence base that includes personal interactions, mainstream public media, social media, Queensland Police, Transport and Main Roads, and Australian Injury Surveillance Data.

2. Introduction

Electric-powered bikes (e-bikes) and scooters (e-scooters) are transforming urban mobility, offering environmental, health, and congestion-reduction benefits. However, their rapid adoption has outpaced regulation, leading to safety risks, enforcement challenges, and a degree of community frustration.

The rise in injuries, fatalities, and community concerns, particularly around illegal high-powered devices, demands a balanced regulatory approach that prioritises public and user safety without stifling innovation.

This submission supports e-bikes as a sustainable transport solution while advocating for targeted reforms to address illegal high-powered devices, infrastructure gaps, and inconsistent enforcement. It proposes measures that enhance enforcement, education, and infrastructure while supporting compliant use.

3. Key issues identified

Some e-bikes are made in Australia, but the market is dominated by international brands with local assembly or customisation. Australian-made or Australian-engineered e-bike brands and models include Volition Electric Bikes, Stealth Electric Bikes, Ordica, Leitner and FiShaw. These distributors have models that are targeted at durability, off-road and higher-powered and higher speed versions as well as lighter, compliant (nominal standard 250W regulation) models.

Most "made in Australia" e-bikes use imported parts (e.g., motors from Bafang, batteries from Samsung/Panasonic). Only 250W pedal-assist models (cutoff at 25 km/h) are road-legal without registration. High-power models (e.g., Stealth, Volition) are for private/off-road use.

There is a growing demand for cargo/utility e-bikes (e.g., Riese & Müller imports) while there is a limited grey market with local innovations in battery technology and performance modifications.

The author has identified the following issues as significant in the control and operation of e-bikes and e-scooters.

3.1 Safety concerns and illegal devices

a) Illegal high-powered e-bikes and e-scooters with throttle-controlled motors exceeding 250W and speeds over 50 km/h are an increasing source of safety risk, with fatalities and injuries rising by 112% from 2021 to 2024.

b) These do not comply with Queensland's EN15194 standard (which limits e-bikes to 250W pedal-assist, 25 km/h).

c) The risk of harm is a complex amalgam of speed, weight, rider/passenger combinations, and protective gear (helmets, joint and other protections).

d) Non-compliant devices (e.g., >250W motors, throttle-only operation, speeds >25 km/h) bypass current laws, potentially endangering riders and pedestrians.

e) Enforcement gaps: Police struggle with unregistered devices, underage riders, and reckless behaviour that may endanger the riders and other persons (e.g., wheelies, speeding on footpaths).

3.2 Regulatory and legislative gaps

a) Importation loopholes: Federal laws allow non-compliant devices to enter Australia, undermining Queensland's road rules.

b) Inconsistent penalties: Fines for illegal e-bike use (e.g., $1,580 or confiscation for non-compliant unregistered devices) are rarely enforced, while legal e-bike riders face sometimes hostile scrutiny. No demerit points for unlicensed riders, reducing deterrence. Police lack clear powers to confiscate illegal e-bikes/scooters.

c) Federal import loopholes: Customs allows importation of non-compliant devices if labelled "for private use."

d) Lack of point-of-sale enforcement: Retailers sell illegal devices without penalties. While absence of any registration system makes identification more difficult.

e) Age limits: there is no minimum age for using EN15194 compliant e-bikes although riders under 16 should be supervised, since they must follow general cycling road rules (e.g., helmet use, yielding to pedestrians) vs. 12+ (supervised) or 16+ (unsupervised) for e-scooters (classified as personal mobility devices) creates confusion.

3.3 Infrastructure and education shortfalls

a) Mixed-use pathways are unsafe due to speed disparities and cognitive responses (e.g., e-scooters at 30 km/h vs. pedestrians at 6 km/h). Not only riders but also children and elderly pedestrians are particularly vulnerable on shared paths.

b) Inadequate carriageway/footpath standards, including poor surfaces, inadequate signage, poor lighting, poor sight distances, and inadequate width.

c) Lack of dedicated bike lanes forces riders onto roads or footpaths, increasing conflict zones.

d) Public awareness is low: Many riders and parents are unaware of the rules (e.g., helmet laws, 25 km/h motor cutoff). No consistent education campaigns in schools or via retailers.

4. Lessons from overseas

Australia is not alone in having disparate and outdated regulations, and some community backlash against e-mobility. E-bike regulations vary significantly across the UK, EU, USA, Canada and New Zealand, with each region adopting different approaches to classification, power limits, speed restrictions, and enforcement. Below is a comparative summary of the current rules in these jurisdictions.

4.1 United Kingdom

The UK government recently rejected proposals to increase e-bike motor power from 250W to 500W and allow throttle assistance up to 25 km/h. This decision was influenced by safety concerns raised by industry stakeholders who argued such changes could blur the line between e-bikes and mopeds, potentially triggering stricter regulations like mandatory insurance and registration.

Meanwhile, illegal modifications—such as removing speed limiters—have become a growing problem, prompting calls for stricter enforcement to limit the use of unsafe, high-powered e-bikes. Critics contend that the current 250W limit is overly restrictive, particularly for cargo bikes and hilly terrain, limiting the utility of e-bikes. Enforcement challenges persist as police struggle with identifying unregistered, illegally modified devices that evade existing regulations.

4.1.1 Current UK Regulations (2025)

a) Motor Power: Limited to 250W continuous power.
b) Speed Limit: Pedal-assist cuts off at 25 km/h.
c) Throttle Assistance: Restricted to 6 km/h unless type-approved.
d) Age Restrictions: Riders must be 14+ to operate e-bikes.
e) Registration & Insurance: Not required for compliant e-bikes.

4.2 United States

The U.S. (750W) uses a three-tier system for e-bikes with federal & state-level classifications and variations. California recently (January 2025) banned throttles on Class 3 e-bikes. Key trends are likely to see stricter enforcement: with regions like California and Orange County are cracking down on illegal high-speed e-bikes (>750W). The U.S. focus on larger vehicles (cars, SUVs, trucks) also sees infrastructure challenges for access and mixed-use pathways facing conflicts between e-bikes and pedestrians. The three tiers are: Class 1: Pedal-assist only, max 32 km/h. Class 2: Throttle-assisted, max 32 km/h. Class 3: Pedal-assist only, max 45 km/h.

4.2.1 Some U.S. State variations (2025)

California:

a) Banned throttles on Class 3 e-bikes (effective Jan 2025).
b) Clarified 750W motor limit (no peak power exceptions).
c) Age restrictions: Some cities (e.g., San Diego) ban under-12s from riding e-bikes.

New York:

Proposed weight-based regulations for e-bikes over 100 lbs to curb unsafe modifications.

New Jersey:

Requires licences for Class 3 e-bikes and clarified 750W motor limit (no peak power exceptions).

4.3 Canada

Canada lacks national uniformity, with a patchwork of rules based around provincial regulations. Emerging trends include safety concerns with rising accidents due to unregulated high-speed e-bikes (e.g., delivery riders using modified models). There are infrastructure gaps with cities like Toronto and Vancouver lacking dedicated lanes, forcing e-bikes onto roads.

Helmets are mandatory for all riders (bicycle or motorcycle helmet standards) and licensing & insurance is not required for compliant e-bikes. Provincial and city regulations may also apply. Licensing & Insurance: There has been some advocacy for stricter rules such as calls for 20–30 km/h caps on shared paths to protect pedestrians, but critics warn this could exclude low-income riders.

4.3.1 British Columbia:

a) Light e-bikes: 14+ riders, motor 500W max.

b) Standard e-bikes: 16+ riders, 500W max, 32 km/h assist limit.

4.3.2 Ontario:

a) Ontario motor power limit is ≤500W (electric only), motor assistance cut off is 32 km/h (throttle or pedal-assist), weight limit ≤120 kg and design requirements are must have functional pedals, permanent manufacturer's label confirming compliance, and lights/reflectors for nighttime use.

b) Ontario has a controversial ban on riders under 16, which critics argue is too restrictive. While Ontario currently allows throttles it may revisit this policy.

4.3.3 Quebec & Nova Scotia:

The benefits of e-bikes have been recognised by rebate programs ($500–$1,400) to incentivise e-bike adoption. This policy view clashes with other safety concerns.

4.4 European Union (EU)

The European Union (EU) maintains a harmonised 250W/25 km/h standard for Pedelecs (e-bikes), with 4,000W allowed for S-Pedelecs (classified as mopeds). Age restrictions are 14-16+.

4.5 Aotearoa New Zealand

New Zealand has a slightly higher motor power of ≤300W (for public road/trail use) with a motor assist cutoff of 32 km/h. Throttle use is allowed but discouraged for prolonged use (no explicit ban). There is no minimum age limit for compliant e-bikes, but riders must wear (approved) helmets (all ages).

Riders may use e-bikes on roads and bike lanes following standard bicycle rules and on shared pathways with riders urged to reduce speed to ≤20 km/h near pedestrians. Higher-powered e-bikes (>300W) are legal on off-road and private land, but are classified as "private use only".

4.6 Summary of e-bike use restrictions

The following table provides a summary of operating conditions for several regions. This is indicative only and may be subject to change. For detailed country/state/province rules, refer to official sources. For an excellent summary of the Australian regulatory framework refer to the Department of Transport and Main Roads legislative framework Brief to the State Development, Infrastructure and Works Committee Inquiry.

Comparative Summary of e-bike use					
Region	**Power Limit**	**Speed Limit**	**Throttle Rules**	**Age Restrictions**	**Key Trends**
UK	250W	25 km/h (assist)	< 6 km/h (throttle)	14+	Rejected 500W increase; illegal modifications a concern
USA	750W (varies)	20–28 mph (Class 1–3)	Allowed (Class 2)	Varies (e.g., 12+ in CA)	Crackdowns on illegal e-bikes
Canada	500W (BC)	32 km/h (BC)	Varies by province	14–16+ (varies)	Rebates for adoption; safety debates
EU	250W Pedelec	25 km/h Pedelec	<6km/hr Walk mode	14-16+	Battery safety Stricter enforcement expansion of bikeways and lanes
NZ	300W	32 km/h	Allowed	No explicit	Proposed speed rules, Battery safety concerns More dedicated lanes
Australia	250W 500W (NSW)	25 km/h	Allowed	16+ for throttle Varies – Qld no specific	Helmets are mandatory. Conditions of use under review (e.g. push for 18+)

5. Discussion

Some popular polls show a significant proportion of Australians support ‘adequate’ or stricter’ restrictions on e-bike operations including a national minimum age of 18 for e-bikes, citing safety concerns. This is an over-reaction in the author’s view.

In Australia, one can obtain a motor vehicle driving licence at 17 and a recreational flying licence at 16. A key difference is the level of education required.

The formal evidence for an age limit as an effective risk minimisation strategy on a risk-adjusted basis is not strong and imposing limits on e-bikes begs the question of what limits are going to be placed on pedal-powered bicycles which can be just as heavy and fast as motor-assisted bikes (gradients also play a role in hilly environments).

Assisted power restrictions are also problematic because it is not power alone but the combination of speed and conflict avoidance measures such as bike design standards, pathway design, passing bays or turnout, width, surface type and condition, lighting and sight distances. These factors, including the mass of the rider and bike combination, will govern manoeuvrability, stopping distances and likely impact damage.

Regulatory and enforcement measures may consider tiered fines rather than draconian prohibitions or “deterrent” measures that may have unintended outcomes and are

generally less effective (in a positive sense) than their proponents claim.

Consideration might be given to (say) $300 fine for first-time offences (no helmet, footpath speeding) or $1,500+ and confiscation for illegal high-powered bikes; issue of demerit points for licensed riders and parental liability for underage riders.

E-bikes will be a critical part of Queensland's transport future, but their success depends on smart regulation, not overreach. By targeting illegal devices, improving infrastructure, and educating users, Queensland can foster safe, sustainable micromobility, especially ahead of the 2032 Olympics.

6. Recommendations

6.1 Strengthen enforcement against illegal devices

a) Expand police powers: Confiscate non-compliant e-bikes/scooters (e.g., >250W motors, throttle-only) and impose escalating fines for repeat offenders.
b) Empower police to confiscate illegal devices on the spot.
c) Target sellers and importers: Penalise retailers distributing illegal devices and mandate compliance checks at point of sale.
d) Provide rule pamphlets with every sale.
e) Pilot e-tag identification: Require vinyl registration numbers (like boats) for high-powered devices to aid enforcement.

6.2 Harmonise regulations

a) Align Queensland and Commonwealth laws: Restrict imports of non-EN15194-compliant devices.
b) Mandate Australian Standards certification for all e-mobility devices
c) Standardise age limits: Apply a 14+ or 16+ rule for all e-mobility devices (with exceptions for supervised minors).
d) Clarify speed/power rules:
    i. Allow 500W power assist with strict speed cutoff and POS identification with a low-cost e-tag system for high-powered devices.
    ii. Legal e-bikes: Keep 250W/25 km/h pedal-assist limit but explore a 30 km/h cutoff for safer overtaking.
    iii. Ban throttle-only devices (except for disability access).

6.3 Improve infrastructure and rider safety

a) Expand separated bike lanes: Prioritise high-traffic corridors ahead of 2032 Olympics (e.g., Gold Coast, Brisbane, Ipswich, Sunshine Coast) to reduce footpath conflicts.
b) Set long term design guidelines for local authority pathways and incorporate "dismount zones" and setbacks in crowded areas.
c) Set speed limits for shared paths:
    i. 6-10 km/h in pedestrian-heavy zones (e.g., shopping districts).
    ii. 25 km/hon mixed-use paths with clear signage.
d) Mandate visibility features: Reflectors, lights, and bells for all e-bikes/scooters.
e) Consider introduction of a minimum level noise or flashing light generator that is activated based on speed (a simple addition to existing controls).

6.4 Public education campaigns

a) Teach safe riding practices and legal requirements as part of school programs.

b) Awareness campaigns: Partner with e-mobility companies to promote rules (e.g., "No helmet, no ride").

c) Encourage responsible use with free safety checks at bike shops.

d) Driver-cyclist empathy initiatives: Include bike safety in driver licensing tests (e.g., simulated close-passing experiences).

6.5 Support compliant e-bike use with smart policies

a) Avoid over-regulation: Don’t employ blanket registration: Allow low-power pedal-assist e-bikes (<250W) as exempt (like bicycles) to encourage uptake.

b) Explore insurance options: Require third-party coverage for high-speed/high-power devices only (such as may be used for delivery and cargo biles).

Appendix A - Inquiry terms of reference

Inquiry into e-mobility safety and use in Queensland

On 1 May 2025 the Legislative Assembly agreed to a motion that the State Development, Infrastructure and Works Committee inquire into and report on e-mobility safety and use in Queensland, with the following terms of reference:

That the State Development, Infrastructure and Works Committee inquire into and report to the Legislative Assembly no later than 30 March 2026 on:

1. Benefits of e-mobility (including both Personal Mobility Devices (PMDs), such as e-scooters and e-skateboards, as well as e-bikes) for Queensland;

2. Safety issues associated with e-mobility use, including increasing crashes, injuries, fatalities, and community concerns;

3. Issues associated with e-mobility ownership, such as risk of fire, storage and disposal of lithium batteries used in emobility, and any consideration of mitigants or controls;

4. Suitability of current regulatory frameworks for PMDs and ebikes, informed by approaches in Australia and internationally;

5. Effectiveness of current enforcement approaches and powers to address dangerous riding behaviours and the use of illegal devices;

6. Gaps between Commonwealth and Queensland laws that allow illegal devices to be imported and used;

7. Communication and education about device requirements, rules, and consequences for unsafe use; and

8. Broad stakeholder perspectives, including from community members, road user groups, disability advocates, health and trauma experts, academia, the e-mobility industry, and all levels of government.