

## **Inquiry into e-mobility safety and use in Queensland**

**Submission No:** 1210  
**Submitted by:** Harry Zwegers  
**Publication:**  
**Attachments:**  
**Submitter Comments:**

## Acknowledgement

I would like to thank Chairman Jim McDonald, Deputy Chair Jonty Bush, and the Honourable members of the Committee for the opportunity to prepare and present this submission. I am incredibly grateful to have originally participated as a witness in the inquiry held at my school, Palm Beach Currumbin State High, and I appreciate your consideration of the views we shared as individuals representing our demographic.

I believe that my voice serves as a representation of many young school-aged adults who will share similar experiences, values, and opinions regarding e-mobility devices. Therefore, I also believe that this gives me a nuanced understanding of what the positives and negatives of e-mobility devices are, as well as general considerations around the topic from this demographic's perspective.

## E-Mobility Registration as a Necessary Reform

As a young adult who interacts with e-mobility devices daily, through sharing footpaths with riders outside near school, to sharing parts of the road with them when driving, I believe that registration must be considered as a practical solution to the enforcement challenges we currently face. Queensland Police Service (QPS) faces practical limitations in identifying unsafe or illegal riders, particularly for those riding recklessly or with excessive speed. This is a recurring issue that is leading to measurable and significant injuries and ultimately is affecting the safety of our community.

I am not the only community member who holds this view. Of more than 1200 submissions in this inquiry, roughly 90 percent have raised concerns over the lack of enforcement and accountability for e-mobility device use. Around 30 percent of those submissions even go further to explicitly support registration as a way to address these problems. I believe that this demonstrates clear community support for a solution that would help improve safety for both riders and pedestrians.

## Registration Options

E-mobility device registration could be done in a few ways. There are three main options for this:

### **A) Metal number plate**

- Similar to motor vehicle plates, this would offer a clear visual identification, but adds weight, cost, and can easily be removed or damaged.

### **B) Reflective identification sticker**

- Low cost and easier to apply, however, less durable and easier to tamper with or deface.

### **C) Radio Frequency Identification (RFID)**

- Embedded within the device, allowing identification without the need for visible markers, which makes it much harder for removal, damage, and defacement.

Whilst each method has its own strengths and weaknesses, RFID offers a unique combination of tamper-resistance, ease of enforcement, and futureproofing. The remainder of this submission will explore the feasibility and potential of RFID as a legal alternative to the community problem of dangerous E-mobility device usage.

## Benefits of RFID Technology

RFID technology offers a modern and scalable method for registering e-mobility devices. It allows for non-visible, tamper resistant identification that can be easily read by enforcement or mobile tracking equipment. More details for these benefits are as follows:

1. **Tamper resistance** – RFID chips could be embedded within the central wiring of the e-mobility device, making the removal extremely difficult for a user. This would be significantly better than options like metal number plates, or reflective stickers, which are able to be easily removed or damaged.
2. **Supports autonomous enforcement** – Similar to mobile speed cameras used for motor vehicles to enforce speed on roads, long range RFID beacons would be able to detect and identify an e-mobility device passing, and determine whether they are riding with excessive speed.
3. **Futureproof and Scalable** – RFID tags can be easily integrated and updated to keep up with future infrastructure, especially as our transport community becomes even more technological and data driven.
4. **Improved Owner Accountability** – Linking an RFID tag to a registration database, (such as what is done currently with number plates and motor vehicle registration) would allow authorities to trace stolen, unsafe, or non-compliant e-mobility devices to specific individuals, which would encourage users to have more responsible use.
5. **Cost effectiveness** – RFID Tags are relatively inexpensive to produce and apply, particularly when compared to more complex alternatives such as metallic number plates. Their compact size and low maintenance structure reduce manufacturing and installation costs, making RFID a more practical option for widespread implementation.

## Considerations and Limitations

Whilst RFID presents numerous advantages, its effective implementation would require addressing a few practical considerations

1. **Cost and Responsibility** – While RFID is a low-cost solution compared to physical registration identifiers, the broader cost of implementation, including hardware, software and enforcement infrastructure must still be addressed. Whether the manufacturer, retailer, user, or government would be responsible for these costs would need to be clearly defined. A potential approach could involve subsidised implementation or using phased rollouts, beginning in new devices only.
2. **Retrofitting for Current Devices** – A decision would be needed for whether registration (and RFID fitting) would apply to only newly sold devices, or new devices must also be retrofitted. A grace period and additionally, voluntary compliance scheme, could be introduced to help users adapt to the new legislation, and technology.
3. **Standardisation and regulation** – Implementing RFID would require setting a standard for the tag type and registration databases. The most appropriate tag would be a passive Ultra High Frequency (UHF) RFID tag, which is compliant with the EPC Gen 2 or ISO 18000-6C standard. This is the most ideal as these tags are low cost, durable and widely supported in currently existing enforcement systems.

## International Examples

Other jurisdictions have implemented registration systems for e-mobility devices, some examples demonstrate both public safety benefits as well as enforcement viability.

**South Korea, Seoul Bicycle RFID Project** – In Seoul, a government backed initiative involved embedding RFID tags in over 1000 bicycles as a pilot to reduce theft and improve traceability. The tags allowed authorities to identify and recover stolen bikes more easily. This initiative demonstrated that RFID can be implemented at a scale without impacting user experience, whilst serving as a model for digital registration of e-mobility devices.

(Source: <https://wiot-group.com/think/en/articles/new-way-to-stop-bicycle-theft-in-seoul/> )

**China, RFID Integration in Smart City E-Bike Networks** – Cities such as Hangzhou and Shenzhen have adopted RFID technology as a part of their smart city transport strategies. RFID tags are embedded into e-bikes to support theft prevention, user identification and real-time monitoring.

(Source: <https://www.cirfid.com/newsroom/rfid-e-bike-management-in-smart-cities-in-china> )

## Conclusion and Recommendation

The public response to the inquiry has made one thing clear: the community strongly supports greater accountability and enforcement in the use of e-mobility devices. I believe that RFID technology represents the most future orientated and practical method for e-mobility device registration. Its advantages: discreet integration, tamper resistance and support for autonomous enforcement, make it well suited to address the current enforcement limitations. Whilst there are valid concerns around cost and infrastructure, these are manageable through clear regulation standards, and phased rollouts.

I recommend that the committee consider:

- Explore RFID registration through trial programs, starting with new device sales.
- Developing a statewide standard for RFID tag type (e.g. passive UHF tags).
- Assessing the feasibility of integrating RFID enforcement with police equipment and traffic infrastructure.

I would like to again thank the committee for allowing me to provide this submission and allowing me to contribute following the original inquiry held at Palm Beach Currumbin State High. I appreciate your consideration of the broader community as well as my view as an individual a part of the young adult demographic.

**Harry Zwegers**

Prefect, Palm Beach Currumbin State High School.

