Inquiry into e-mobility safety and use in Queensland

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27 September 2025

Queensland Parliament Inquiry into E-mobility Safety and Use in Queensland
SDIWC@parliament.qld.gov.au

Dear Committee

Apologies for my late submission to this committee, however I have just become aware of this enquiry and its scope.

I am a physiotherapist who works in the disability sector and specialises in the area of prescribing adaptive equipment including adaptive recreational devices. It is my concern that riders of adaptive hand-operated cycles, who use such devices because their physical limitations make it impossible to operate a standard e-bike, are being disadvantaged by both current legislation and may be severely disadvantaged by the outcomes of your enquiry, unless their specific needs are considered. In fact, the existence of the enquiry itself is already disadvantaging Queenslanders with disabilities, as our State Motor Accident Insurance Scheme (NIISQ) now has in place a blanket ban on approval of power assisted adaptive recreational devices pending the outcome of this hearing.

I am dismayed by the possibility that, by neglecting to consider the needs of disabled riders of adaptive hand-operated cycles, the recommendations of the committee may unwittingly turn Queenslanders who use these devices into criminals for using equipment that allows them to participate alongside their able-bodied peers.

I urge the committee to consider creating a specific category for adaptive hand-operated cycles, and regulating this appropriately, so that Queenslanders with disabilities can continue to freely participate in cycling activities in our great State, a goal consistent with Queensland's Disability Plan 2022-27.

In summary, my main points are as follows:

i. Adaptive hand-operated cycles are currently ignored in Queensland legislation, and do not fit any of the current categories for wheeled devices used in Queensland.

ii. Adaptive hand-operated cycles are NOT e-bikes. From technical, clinical and human rights perspectives, comparing such devices to a standard e-bike is a flawed and inequitable exercise.

iii. Adaptive hand-operated cycles are specialised disability-specific devices, usually TGA registered, that operate quite differently from either standard bicycles or e-bikes. As well as providing features that physically allow the impaired rider to transfer into and operate the cycle, they typically provide power assist, often 500-1000 watt systems, to allow the disabled rider to operate the cycle independently and keep up with able bodied peers: this level of power assist is crucial to the function of the bike for a disabled user with physical impairments.

iv. Adaptive cycling is supported by a considerable body of evidence as a generally safe, effective and sustainable form of exercise for individuals with spinal cord injury and similar types of physical impairment, with a wide variety of participation benefits.

v. Adaptive biking in Australia has a growing activity base and new events and trails are being opened all the time. Many riders are using adaptive hand-powered cycles, throughout Australia, on and off the road. Bikes are being funded by a variety of schemes, including regularly by the NDIS and our own state scheme, NIISQ.

vi. Consistent with Queensland's Disability Plan 2022-27, it is the human right of Queenslanders with disabilities to continue to freely participate in cycling activities in our great State, using appropriate disability-specific equipment.

Below I have provided information to support each of the above points.

As the committee will be aware, EN15194, a European standard that specifies the safety and performance requirements for electric power-assisted bicycles (Pedelecs), is generally applied in Australia. Electric power assisted bicycles which fall into this category are not required to be registered nor the rider required to be licensed.

Key features of EN15194-compliant e-bikes include:

- **Pedal-assist only:** The motor only provides assistance when the rider is pedalling.
- **250W maximum power:** The motor's continuous power output cannot exceed 250 watts.
- **25 km/h cut-off:** The motor assistance must cut out when the e-bike reaches 25 km/h.

Adaptive hand-powered cycles meet NONE of the above criteria and patently do NOT fall within the technical parameters to be classified as an e-bike. Neither do these devices meet the Queensland criteria for a motorised mobility device, nor do they fit within the definition of other categories including wheeled recreational devices or personal mobility devices.

Adaptive bicycles, with electronic assist and features that do not meet the EN15194 standard, are generally treated in Australia as motorcycles or mopeds, requiring registration, licensing, and other relevant regulations. This is the case in Queensland, where such devices, if they are to be used on public roads, can currently (theoretically) be registered as non-compliant recreational vehicles.

However, in practice, the current legislation does not even mention such devices, they are ignored totally. This is resulting in the devices being considered by funding agencies including NIISQ and NDIS as e-bikes, when they patently are not, and thus considerably disadvantages disabled riders.

From my considered perspective, adaptive hand-operated cycles demonstrably NOT e-bikes. From technical, clinical and human rights perspectives, comparing such devices to a standard e-bike is a flawed and inequitable exercise.

Adaptive hand-operated cycles do not meet the technical requirements for an e-bike, nor are they similar clinically. A standard e-bike presupposes the rider has lower limb motor control, dynamic sitting balance, and the ability to mount and dismount from a narrow, elevated frame — capacities that are absent in the case of physically impaired riders. For such individuals, a standard e-bike is not simply "less suitable": it is entirely inappropriate and unusable.

Adaptive hand-operated cycles are purpose-built to address the functional impairments of clients with significant physical impairments. They provide stable three-wheel geometry, low transfer height, supportive seating, and full upper-limb-only controls. In clinical terms, this is not an "alternative" to an e-bike, rather it is the only safe, functional means of achieving the same category of mobility, recreation, and community participation as able bodied peers.

Labelling and evaluating adaptive hand-operated cycles as e-bikes is not only technically and clinically incorrect, it is also inequitable. Under the United Nations Convention on the Rights of Persons with Disabilities (CRPD) — to which Australia is a signatory — individuals have the right to:

- Equal access to mobility aids and assistive technology (Article 20)
- Full and effective participation in community and recreational life (Articles 9 & 30)
- Freedom from discrimination in access to services and equipment (Article 5)

Evaluating use of adaptive hand-operated cycles, using standards for devices that a disabled rider cannot physically use is inconsistent with the rights enshrined within the UN CRPD. It risks denying access to appropriate technology solely on the basis of disability, which is tantamount to indirect discrimination. The correct clinical and ethical question is not whether the rider could use a standard e-bike — that is a categorical "no" for most adaptive cycle users— but which adaptive mobility device will allow them to enjoy the same freedoms, opportunities, and quality of life as non-disabled peers. On both clinical evidence and human rights grounds, adaptive hand-operated cycles the only reasonable choice many riders in this context.

Adaptive hand-powered cycles are really quite different from standard cycles in every way. Most of these devices are disability specific and listed with the Australian Register of Therapeutic Goods (ARTG). These cycles are relatively large and heavy (typically around 40kg) and are operated only by the upper limbs.

When selecting an adaptive hand-powered cycle for a client with a disability, the focus is on choosing a clinically appropriate solution, given the rider's physical impairments, participation goals and identified environments of use. Typically, these devices have an extended lifetime of use (of around 10 years) and can be very expensive ($30-$45,000 is typical) so it is vital to choose a durable solution that meets needs now, and into the future. Power assist is a crucial feature of adaptive hand-powered cycles.

Even if unimpaired by the riders disability, arms do not physically have the same capacity as legs to general forceful pushing. To counter this fact, as well as providing features that physically allow the impaired rider to transfer into and operate the cycle, adaptive hand operated cycles also typically provide power assist, often 500-1000 watt systems.

The wattage of the power assist system on adaptive hand-operated cycles is much higher than on a standard pedelec or e-bike, as the motor needs to generate more power, to overcome both the weight and size of the cycle itself, and to compensate for the reduced capacity of the rider to generate force with arms. Reducing the requirement for high force pushing though the arms is also a safety feature, as it reduces the need for high force pushing, which puts the rider at risk of shoulder injury: this is a well-understood risk for manual wheelchair users and one that can have significant negative impacts on daily function and independence.

Power assist is vital to the rider of an adaptive hand-powered cycle on all but flat, paved roads. A rider of an adaptive hand powered cycle loses momentum more quickly than an able bodied rider on a typical bike when going up hills. The bikes are also quite wide, so on shared roadways when the rider has to pull over so one wheel is in the rough, this also slows you down very quickly. The boosted power assist helps to maintain momentum for a rider with reduced capacity to push forcefully, in a very heavy bike system.

Additionally, if the bike is used off road (which many are) the power assist needs to be powerful enough to generate the torque required to keep the bike going over rough, uneven terrain of varying grades. This is especially important as if an impaired rider gets stuck, they cannot simply walk out.

Adaptive cycling is a popular activity, and supported by considerable evidence as a generally safe, effective and sustainable form of exercise for individuals with spinal cord injury and similar types of physical impairment. The benefits of participation in adaptive cycling activities for such clients is well supported by a considerable body of clinical evidence. Benefits of participation in adaptive biking activities are likely to be similar to participation in other cycling sports, and are summarised in both the 2015 study by Sonja De Groot & Co. and the 2015 Swiss community survey of 1549 participants published by Ursina Arnet & Co. In these and other prior and subsequent studies, the relationship between active lifestyle and wheelchair-specific fitness is confirmed, as is the relationship of participation in recreational fitness activities to higher levels of function across all 3 ICF domains.

There is additionally a rather overwhelming body of evidence around the positive relationship between participation in adaptive sporting pursuits and quality of life generally, well summarised in the 2019 review by Diaz et al., in which the authors emphasise the positive psychosocial benefits of adaptive sports and conclude that adaptive sports participation is associated with improvements in select mood symptoms, body image, self-efficacy, self-competence, and quality of life.

Adaptive biking in Australia has a growing activity base and new events and trails are being opened all the time. Many riders are using adaptive hand-powered cycles, throughout Australia, on and off the road. Bikes are being funded by a variety of schemes, including regularly by the NDIS and our own state scheme, NIISQ.

Some current online references regarding adaptive cycling in Australia can be sourced at the following sites:

https://www.breaktheboundary.com.au/

https://auscycling.org.au/news/australias-first-ever-adaptive-champions-crowned-in-downhill

https://www.youtube.com/watch?v=ebspe0O88r0

Consistent with Queensland's Disability Plan 2022-27, it is every disabled rider's human right to have provided an adaptive mobility device that will allow them to enjoy the same freedoms, opportunities, and quality of life as non-disabled peers, and thereby engage in full and effective participation in community and recreational life. Noted in most studies is that access to appropriate adaptive equipment is identified as a key barrier to participation. If you cannot use the right bike, you cannot participate, its as simple as that. If adaptive hand-powered cycles cannot be legally used in Queensland, many Queenslanders with disabilities will be unfairly disadvantaged.

Please feel free to contact me if I am able to provide further information to support this submission, including the contacts of Queenslanders who currently use adaptive hand-powered cycles

Regards Jenni

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