

**Submission
No 16**

ELECTRIC AND HYBRID VEHICLE BATTERIES

Organisation: Owners Corporation Network

Date Received: 24 November 2023

Parliament of NSW

Joint Standing Committee on Road Safety (Staysafe)

OCN response to NSW parliamentary inquiry into Electric and hybrid vehicle batteries.

November 2023

With reference to:

<https://www.parliament.nsw.gov.au/committees/inquiries/Pages/inquiry-details.aspx?pk=3005>

That the Joint Standing Committee on Road Safety inquire into and report on:

- (a) the risk and management of fires and other issues caused by batteries in electric and hybrid vehicles, including light electric vehicles
- (b) the risk to workers in the automotive industry and emergency services personnel caused by batteries in electric and hybrid vehicles
- (c) the adequacy of training and equipment for workers in the automotive industry and emergency services personnel regarding potential hazards of batteries in electric and hybrid vehicles
- (d) any other related matters.

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Introduction

The perception that Electric vehicles create a significant new risk from a fire safety standpoint has some history and has been widely covered in the media.

The ACCC undertook an investigation recently into Lithium-Ion battery safety, which OCN supports:

<https://www.accc.gov.au/system/files/Lithium-ion%20Batteries%20report%203%200.pdf>

There are several perspectives to this issue worth exploring, which have a bearing on the nature of the risks, and the appropriate responses from government.

OCN's response mostly relates to our area of expertise, which as the independent peak consumer body representing residential strata and community title owners and residents, ie those who live and reside in apartment buildings, townhouses, villas and duplexes.

OCN's response is designed to provide a set of recommendations to the Inquiry, based on fact, data, and expert recommendations gathered from multiple reliable resources.

Our perspective represents the large and rapidly increasing sector of apartment owners in Australia.

OCN specifically endorses and supports the Electric Vehicle Council's (EVC) submission to the Joint Standing Committee on Road Safety and the ACCC report on Lithium-Ion battery safety. We believe they adequately frame the issues associated with registered passenger Battery Electric Vehicles, which pose minimal risk in domestic dwellings.

Summary of Recommendations

Following is a summary of our key findings and recommendations:

- **OCN is concerned about the existence of the increasingly politically motivated sensationalist commentary, creating FUD – Fear, Uncertainty, and Doubt - which both promotes misinformation and barriers to the introduction of electric vehicle charging in apartment buildings. This directly affects the implementation of the government's sustainability and safety agendas.**
- **OCN urges the Inquiry to keep two high level goals in focus:**
 - The overarching priority to create a better, cleaner future that electric vehicles help to provide, and
 - Let the facts, rather than opinion, speak. Our response is supported with detailed analysis by the EV Council (EVC), EV FireSafe (a company funded by the Australian Department of Defence to research electric vehicle battery fires & emergency response, are among the world leaders in this space) and the ACCC.
- **Most electric vehicle fires are not caused by road registered electric vehicles but rather by personal mobility devices (PMDs). This is a worldwide issue and there is clear evidence of a need for better educations and regulation of these PMD's. This is borne out in the output of the ACCC process and report, which identified that just 1% of the lithium-ion battery fires FRNSW responded to over a twelve-month period involved a road registered electric vehicle. 99% of lithium-ion battery fires responded to by FRNSW were for other consumer products.**

- **OCN supports a risk mitigation approach to manage the PDM (personal mobility device) fire risk, which data clearly shows cause the largest percentage of vehicle lithium-ion battery fires.**

This includes:

- Education on the safety risk of PMD including OCN model by-law.
 - Support to the EVC suggestion that the NSW government should increase resourcing to NSW Fair Trading to address the rising incidence of unsafe products outside of the road-registered vehicle domain, including ACCC and CSIRO recommendations on testing and labeling.
 - NSW government to investigate the case for recommendations relating to the safe storage and charging of electric scooters, especially in environments such as apartment complexes and offices.
- **OCN agrees with EVC that NSW Government should act on this matter by way of the relevant state level building regulator, to make it clear that the treatment of EV charging installations and EV car parking locations as ‘special hazards’ is not required at this time.**
 - **OCN does not support an outcome where additional requirements are imposed in the built environment, at substantial cost to consumers, without evidence as to the need for these measures, or any form of regulatory impact testing.**

Background

OCN welcomes the opportunity to provide input into the safety issues with electric and hybrid vehicle batteries.

Strata is the fastest growing form of residential property ownership in Australia. Over half the new dwellings to be built in our metropolitan areas over the next decades will be strata titled. The growth of this sector raises increasingly important questions over property ownership and governance.

The Owners Corporation Network of Australia Limited (OCN) is the independent peak consumer body representing residential strata and community title owners and residents. As such, OCN is uniquely positioned to understand the needs and constraints within this unique housing sector, as well as to advise on the potential impacts that legislation may have on planning, development, and day-to-day operational outcomes. OCN are experts in residential strata, hence our comments relate to what our members are seeking. We do have significant expertise in charging of electric vehicles in strata and were the authors of the content of the NSW Government website – Making apartment buildings EV ready.

While our response relates to the strata sector, we do totally support the submission by the Electric Vehicle Council of Australia (EVC) as experts in electric vehicles and have included parts of their submission for completeness.

OCN strives to create a better future for residential and community living and ownership. We support the transition to resilient, empowered communities living in climate ready, defect-free buildings.

The Strata sector

Over 2.5 million people live in strata households in Australia. NSW, which has the largest sector, has just over 89,000 residential strata schemes housing 1.3 million people. It is the fastest growing type of dwelling, with over a thousand new schemes being registered each year. The national ownership profile averages 60:40 resident owners to investors.

https://cityfutures.adu.unsw.edu.au/documents/717/2022_Australasian_Strata_Insights_Report.pdf

All NSW strata buildings must have an owners corporation which is a statutory corporation – it has unlimited liability and mandatory obligations to hold building insurance and strict obligations to carry our repairs and maintenance. Day-to-day administration generally falls to resident owners and strata committees. The role of the strata management industry is to provide administrative support under commercial “strata agreements”.

We strongly support efforts by the NSW Government to deliver policy measures that will provide for the better and cleaner future by reducing emissions from the transport sector, including accelerating the adoption of electric vehicles (EVs) of all shapes and sizes, for all NSW households and businesses.

We acknowledge that all industries have a critical role to play in achieving Australia’s emissions reduction targets of 43% by 2030 and net zero by 2050.

Currently accounting for over 18% of Australia’s national emissions, transport sector emissions have already increased by 22% between 2005 and 2019. Disappointingly, without national action,

transport emissions are on track to still be higher than 2005-levels by 2030 and as a result, risk taking Australia further away from our 43% emissions reduction target.

The reality is that without strong action to reduce transport emissions, a disproportionate burden will be placed on others, including farmers, manufacturers, builders, miners and energy providers, to reduce emissions even further in order to achieve our emissions reduction targets.

A cleaner future *(Source: EVC)*

The upside of EVs, by comparison to petrol and diesel vehicles, is well understood in terms of emissions outcomes – practically speaking, we cannot achieve net zero without electrifying road transport. Failure to achieve net zero will have strategic consequences for our country.

From a narrower human safety aspect, though, we can consider the health impact on our citizens of petrol and diesel exhaust in our cities. Melbourne University has undertaken robust work in this space, concluding that vehicle emissions are responsible for 11,000 early deaths in Australia each year:

<https://www.unimelb.edu.au/newsroom/news/2023/february/vehicle-emissions-may-cause-over-11,000-deaths-a-year,-research-shows>

Based on the vehicle fleet size of 20 million vehicles, this means that for every ~1800 vehicles transitioned to electric, we could reasonably expect the annual early fatality count to fall by 1.

To the extent that opponents of vehicle electrification successfully delay the transition, through measures like obstructing the ability to charge EVs in our built environment without evidence of actual risk, we can expect to continue to see the current fatality rates associated with air pollution.

OCN is concerned about the existence of the increasingly politically motivated sensationalist commentary, creating FUD – Fear, Uncertainty, and Doubt - which both promotes misinformation and barriers to the introduction of electric vehicle charging in apartment buildings. This directly affects the implementation of the government’s sustainability and safety agendas.

OCN urges the inquiry to keep two high level goals in focus:

- The overarching priority to create a better, cleaner future that electric vehicles help to provide, and
- Let the facts, rather than opinion, speak. Our response is supported with detailed analysis by the EV Council (EVC), EV FireSafe (a company funded by the Australian Department of Defence to research electric vehicle battery fires & emergency response, are among the world leaders in this space) and the ACCC.

Terms of Reference Response

a) Electric Vehicle Fire Safety Risk

There are significant differences in the fire risk across the wide range of lithium-ion battery (li-ion) powered devices including Li-ion powered electric vehicles. Appendix B distils this risk into several categories. Largely because of the more robust regulatory coverage of road registered electric vehicles, there are significant quality and safety differences between road registered electric

vehicles and light electric vehicles. To differentiate, we prefer to use the Transport NSW definition of light electric vehicles as Personal Mobility Devices (PMD) and use that term throughout this response.

Minimal road registered electric vehicle fire risk

The perception that electric vehicles create a significant new risk from a fire safety standpoint has some history and has been widely covered in the media but is not supported by the facts.

The ACCC undertook an investigation recently into Lithium-Ion battery safety. Some key takeaways from that ACCC report concerning the EV industry:

5.1.4: “FRNSW reported 149 battery-related incidents between 1 January and 15 September 2023, a 16% increase on the same time last year. [...] 1% involved electric vehicles”,

5.1.1: “The Electric Vehicle Council noted the lack of Li-ion battery safety incidents associated with road-registered e-vehicles and attributed this to more robust regulatory coverage of these products. The CSIRO noted that road vehicles are required to meet the Australian Design Rules (Australia’s national standards for road vehicle safety) in accordance with the Motor Vehicles Standards Act 1989”

The ACCC report is supported by robust analysis by EV Fire Safe.

Electric vehicle fires in Australia have been small in number, with a total of 6 while in normal operation. In all cases, the EVs suffered major damage to the high voltage lithium-ion battery pack, leading to thermal runaway (battery fire). See appendix A for details. In all cases, fire fighters have successfully responded using existing tools and techniques for vehicle fires.

In no cases in Australia to date has there been any link between EV charging and a fire.

The 7 known EV fires in the country over a three-year period coincided with a starting number of EVs on the road when the first one happened of roughly 30,000, and the number on road today being about 150,000. This implies something on the order of ~2-4 electric vehicle fires per 100,000 per year.

By comparison to petrol/diesel vehicles, FRNSW attended ~2,461 vehicle fires in the 2020/21 (page 36: https://www.fire.nsw.gov.au/gallery/files/pdf/annual_reports/annual_report_2021_22.pdf).

Based on the ~5.89m registered vehicles in NSW in the time frame (<https://www.abs.gov.au/statistics/industry/tourism-and-transport/motor-vehicle-census-australia/latest-release>), this implies a vehicle fire rate of ~41 vehicles per 100,000 per year.

This is broadly aligned with similar research out of Europe, where it’s been concluded that EVs burn at about one twentieth of the frequency of petrol/diesel vehicles:

<https://www.msb.se/sv/aktuellt/nyheter/2023/maj/brander-i-eltransportmedel-under-2022/?ref=warpnews.org>

Electric vehicle fires appear in the news, because they’re new, and rare. Petrol car fires happen many times every day in Australia, they’re simply not newsworthy. (source EVC)

OCN reinforces the fact that road registered EVs have one twentieth the fire risk when compared with internal combustion engine vehicles (ICE). Despite this far higher risk of fire in ICE vehicles, no one is calling for any changes to the way ICE vehicles are garaged and fueled.

Most electric vehicle fires are not caused by road registered electric vehicles but rather by personal mobility devices (PMDs). This is a worldwide issue and there is clear evidence of a need for better education and regulation of these PMD's. This is borne out in the output of the ACCC process and report, which identified that just 1% of the lithium-ion battery fires FRNSW responded to over a twelve-month period involved a road registered electric vehicle. 99% of lithium-ion battery fires responded to by FRNSW were for other consumer products.

Real Li-Ion vehicle battery fire risk and mitigation

For apartment owners and residents, per appendix B, there is a real fire risk in Personal Mobility devices, (PMD) e-scooters, e-bikes etc. In NSW most PDM are banned from use in public spaces, except for e-bikes, which have power and speed limitations.

Some key takeaways from the ACCC report concerning PMD:

4.3. Consumer safety risks:

- Unsafe charging practices
- Use of incompatible chargers or overcharging batteries is a risk factor
- There may be charging risks where there is no battery management system to protect against overcharging, or where incompatible charging equipment is used, or devices are overcharged
- Repurposed, modified or customised battery applications
- Hazards may arise when products with Li-ion batteries are repurposed or modified. This includes DIY retrofitted and second-life battery applications.

5.1.4 “FRNSW reported 149 battery-related incidents between 1 January and 15 September 2023, a 16% increase on the same time last year. [...] 22% involved e-mobility devices, a 94% increase.

5.1.5: “Data released by the London Fire Brigade indicates e-scooters and e-bikes have become a growing concern over the past 5 years with fires caused by these products rising from 5 in 2018 to 116 in 2022 – representing a significant increase. The London Fire Brigade reportedly estimates it is now called to an e-bike or e-scooter fire once every 2 days on average.

Greater consumer education about best practice for charging Li-ion battery products will assist with risk mitigation. Consumers need to be aware of the risks of these products as well as the steps and tools available to them to reduce those risks.

Steps consumers can take to reduce the likelihood of charging related incidents include:

- ensure the charger is suitable for the battery in the product being charged
- monitor charging times of Li-ion battery products and disconnect products from chargers once they are fully charged (consider setting timers as a reminder to unplug devices)
- do not use batteries or devices if products are overheating or showing signs of failure such as swelling, leaking or venting gas. In these cases, place leaking or damaged batteries in a clear plastic bag (after they have cooled down) and contact your local council for disposal options
- charge batteries and devices away from combustible materials (such as beds, sofas or carpet)

OCN – Parliamentary inquiry into EV batteries response

- store batteries and Li-ion battery products such as e-scooters in cool, dry places and out of direct sunlight, including while charging
- allow time for batteries to cool down after use and before recharging.

These steps can help avoid charging related incidents. When using replacement chargers, consumers should ensure the charger is suitable for the battery in the product they are charging.

Key ACCC recommendations:

- Recommendation 2 (Consumer safety): Consumers should have clear and accessible educational resources on Li-ion battery safety.

OCN, in conjunction with EV FireSafe and the Insurance Council of Australia, has developed an e-mobility bylaw (see Appendix C) and will establish educational webinars.

- Recommendation 4 (Regulatory landscape): State and territory governments should build a fit-for-purpose, nationally consistent regulatory framework for electrical consumer products, supported by the Australian Government.

OCN agrees and supports the establishment of a such a framework, particularly with respect to PMD.

- Recommendation 5 (Regulations): State and territory electrical safety regulators should introduce, administer and enforce clear requirements for the testing, labelling transportation and storage of Li-ion batteries and products containing Li-ion batteries. These requirements should be consistent across all jurisdictions.

OCN supports 9.3 the use of the Regulatory Compliance Mark as a base requirement for e-mobility devices charged in apartment buildings.

OCN notes and supports the EVC views on PMD, specifically:

The EVC observes that while electrified micro-mobility presents an excellent pathway to reducing overall transport emissions and lowering the overall cost of transport, and that the technical standards associated with these types of products may be adequate, the regulatory environment around these products in Australia is presently inadequate.

The importation and sale of equipment of this type is very lightly regulated in practice, which will predictably result in the importation and sale of cheap, non-compliant product. Better regulation, and regulatory enforcement activity, around the importation and sale of this type of product is needed. By comparison, road-registered vehicles, such as cars, motorbikes, and trucks, are massively regulated, with strong enforcement regimes.

OCN supports a risk mitigation approach to manage the PDM fire risk, including:

- **Education on the safety risk of PMD including OCN model by-law.**
- **Support to the EVC suggestion that NSW government should increase resourcing to NSW Fair Trading to address the rising incidence of unsafe products outside of the road-registered vehicle domain, including ACCC and CSIRO recommendations on testing and labeling.**
- **NSW government to investigate the case for recommendations relating to the safe storage and charging of electric scooters, especially in environments such as apartment complexes and offices.**

b) & c) Automotive industry – vehicle maintenance and repair: (Source: EVC)

Road registered vehicles with batteries at voltages high enough to be hazardous have been in the Australian market since the late 1990s, with the introduction of the Toyota hybrids. There are now in excess of 400,000 road registered vehicles with traction batteries on Australian roads, from many manufacturers.

From the point of view of risk to the people undertaking maintenance on these vehicles, it has long been understood that higher voltage batteries constitute a different type of risk. The relevant Australian standard in this domain is AS5732, which has recently been updated with input from a broad cross section of industry and government experts at a national level.

This standard is called up in the relevant commonwealth training programs, such as AUTETH101. These courses have been offered in Australia for over ten years and are presently offered by about 185 Registered Training Organisations around the country.

In terms of the adequacy of this arrangement, we'd point to the fact that there is no record we're aware of where an injury in the automotive maintenance space attributable to the battery in a hybrid or electric vehicle has occurred. We'd suggest that this is prima facie evidence that the existing regulatory arrangement is likely adequate.

The Electrical Safety Office, following a long consultation process, arrived at a guidance position around this matter, essentially recognizing that the existing competency units and OEM training options are valid and adequate:

<https://www.worksafe.qld.gov.au/safety-and-prevention/hazards/electricity/electric-vehicle-guidance>

b) and c) Emergency services personnel (Source: EVC)

There has been substantial international research in this domain. EV FireSafe, a company funded by the Australian Department of Defence to research electric vehicle battery fires & emergency response, are among the world leaders in this space.

The short version is that vehicle OEMs provide data to the ANCAP rescue app, have been proactive in supporting training for first responders, and have supported and complied with requirements to label EVs for easy recognition by emergency services.

Vehicle fires are, by their nature, hazardous, regardless of the powertrain. The products of combustion of a vehicle are toxic. The same measures used by emergency services personnel to protect themselves from harm when addressing petrol and diesel vehicle fires are applicable when addressing electric vehicle fires.

Electric vehicle fires in Australia have been small in number, with a total of 6 while in normal operation. In all cases, the EVs suffered major damage to the high voltage lithium-ion battery pack, leading to thermal runaway (battery fire) (Please see appendix A). In all cases, fire fighters have successfully responded using existing tools and techniques for vehicle fires.

As with any emerging technology, fire & emergency agencies need to develop an understanding of the risks & hazards, standard operating procedures, awareness & training documentation, as well as connect with subject matter experts, such as EV FireSafe.

The new risks & challenges of electric vehicles are well understood by EV FireSafe, which has been contracted by a number of Australian emergency agencies to develop SOPs & training packages.

Additionally, EV FireSafe is involved with state-based, multi-agency working groups to collaboratively develop knowledge from emergency response through to towing, storage, salvage or repair of a damaged EV. This work is emerging and at this stage unfunded.

Ongoing training & education will continue to be necessary, to the extent that vehicles come to market requiring different techniques, or present different risks. The EVC encourages the fire services to determine their training requirements and secure sufficient resources / funding to undertake said training.

d) Built environment (Source: EVC)

Many parties have suggested that the existing minimum requirements in our buildings are inadequate with respect to managing the risk posed by EVs.

FRNSW has been among these parties, taking a public position that amounts to, “follow the electrical regulations”, <https://www.fire.nsw.gov.au/page.php?id=9391>, while taking a private position when engaging with fire engineers on consent processes for construction that installations of EV charging stations constitute a special hazard. The EVC response contains an example.

This duality of position creates significant challenges for developers seeking to design buildings to support the uptake of electric vehicles. Treating car parking areas as ‘special hazards’ if EV charging equipment is included can increase the cost of construction of the building as a whole by between 5 and 10%. This is more than enough to convince developers not to install EV charging equipment. It also does nothing to reduce risk, because the fire risk comes from the cars, not the charging – and the car parks will be full of EVs in future, regardless of whether or not charging equipment is installed.

FRNSW launched a research program (SARET), with initial calls for expression of interest in November 2021, in part to work through appropriate measures to manage the perceived elevated risk in buildings. An initial workshop was held in February 2022. The EVC articulated early in this process that it would be appropriate for the SARET program to undertake practical testing, to determine the adequacy of existing construction code requirements. Regrettably, the SARET program appears to have failed to effectively engage key industry participants, and (to the EVC’s knowledge) has not scheduled any practical testing of EV fires in structures built to Australian standards and codes.

For reference, substantial practical international testing has been done along these lines, to understand the differences between EV fires and petrol/diesel fires in the presence of specific suppression arrangements. From this work, it appears that under standard conditions, the risk of a fire spreading from an EV is lower than the risk of a fire spreading from a petrol or diesel vehicle:

<https://www.researchgate.net/publication/373037873> Water Spray Fire Suppression Tests Comparing Gasoline-Fuelled and Battery Electric Vehicles

Like FRNSW, various Australian fire services have taken positions indicating that the potential presence of EVs in buildings, or the installation of EV charging equipment, should mean that the area is treated as a ‘special hazard’. No evidence is typically provided to justify these positions, and no detail is typically provided for fire engineers to use to determine what a suitably safe design would be. While the guidance documents and position statements from the fire services don’t generally have the legal force of regulation - and are therefore not subject to any meaningful form of regulatory impact testing or oversight - they often have the effective force of regulation because the

community of certifying engineers in this space finds it very difficult to ignore the fire services guidelines. Examples include:

https://www.qfes.qld.gov.au/sites/default/files/2022-04/Electric-vehicle-chargingstations_0.pdf

<https://www.mfs.sa.gov.au/community/building-and-commercial-fire-safety/guidelines-andinformation/Fire-Safety-Position-Statement-EV-Charging-Stations-in-Buildings-1.0.pdf>

Fire Rescue Victoria has taken a similar pathway to New South Wales, refraining from taking a public stance opposed to EVs, but issuing private guidance by email to fire engineers setting out expectations of ‘special hazard’ treatment of car parks.

The industry peak body for fire services (AFAC) has gone in this direction as well, with the publication at the end of 2022 of a position statement of their own:

https://esa.act.gov.au/sites/default/files/2023-01/afac_evs-in-built-environment_2022-1222_v1-0.pdf

In addition to the fire services and their peak body, we’ve seen efforts by the Australian Institute of Building Surveyors to develop a policy position that approval or authorisation of dedicated electric vehicle charging points in existing buildings should be inclusive of an assessment against technical criteria by a building surveyor:

<https://aibs.com.au/Public/Public/News/2022/Member-Alert-Charging%20Electric%20Vehicles%20in%20Buildings%20-%20Draft%20Policy.aspx>

This is not currently required in existing buildings, because the installation of Electric Vehicle charging points is electrical work, which is already a highly regulated activity, undertaken by licensed professionals under a robust regulatory regime. Were this position to change in the manner favored by the AIBS, it would generate significant new income for AIBS members, and raise the cost and complexity of EV charging equipment installations for consumers. As with the fire services positions, no evidence is presented to justify the additional costs which would be imposed upon consumers, or analysis undertaken to show that the proposed measures will deliver a real-world safety benefit.

A further example is published misinformation by Building Consultants, Credwell, see section titled Myths and Misinformation.

For the avoidance of doubt, FRNSW and others are seeking an outcome where additional requirements are imposed in the built environment, at substantial cost to consumers, without evidence as to the need for these measures, or any form of regulatory impact testing. These positions are being pursued despite the presence of robust global evidence that road-registered EVs do not present a higher risk in our built environment than our existing petrol and diesel fleet of road-registered vehicles.

There have been some efforts made by government to set the record straight on this matter. The Australian Building Codes Board published a guidance note, laying out practical and low-cost recommendations where new buildings are including EV charging:

<https://www.abcb.gov.au/resource/advisory-note/abcb-advisory-note-ev-charging>

This was welcomed by the industry. Regrettably, while the ABCB guidance does not call for special hazard treatment, it also does not make it clear that special hazard treatment of car parks is not warranted. The result of this is that at least one fire service (ACTF&R) is taking a stance of ‘buildings

*will comply with the ABCB guidance note *and* the car park will *also* be treated as a special hazard’.*

OCN reinforces the fact that road registered EVs have one twentieth the fire risk when compared with internal combustion engine vehicles (ICE), and there are no incidents of EV fires in Australia whilst EVs are being charged.

OCN agrees with EVC that NSW Government should act on this matter by way of the relevant state level building regulator, to make it clear that the treatment of EV charging installations and EV car parking locations as ‘special hazards’ is not required at this time.

OCN Supports the EVC call the development of robust requirements in this domain. Critically, these requirements must be informed by evidence, and be subject to appropriate regulatory impact testing. The status quo is that the requirements are being decided without evidence, appropriate process, or transparency, by parties without an interest in the cost implications of the requirements.

And OCN supports the EVC suggestion that given FRNSW has had two years to produce useful results from the SARET program and has not scheduled the type of work likely to yield these results, it might be more appropriate for CSIRO or EV FireSafe to do some work in this domain, which NSW government could contribute to financially. A robust and independent review of global literature on the subject would be a good start.

OCN does not support an outcome where additional requirements are imposed in the built environment, at substantial cost to consumers, without evidence as to the need for these measures, or any form of regulatory impact testing.

d) Myths and Misinformation

OCN is concerned about the existence of the increasingly politically motivated sensationalist commentary, creating FUD – Fear, Uncertainty, and Doubt - which both promotes misinformation and barriers to the introduction of electric vehicle charging in apartment buildings. This directly affects the implementation of the government’s sustainability and safety agendas.

Some examples include:

BCA Misinformation

Building Consultant, Credwell, claim that the BCA requires that ‘electric vehicles to be stored in a fireproof enclosure’.

In November 2022, we received clarification from the Senior Building Codes Officer, Policy and Strategy, Building Codes and Regulation, Better Regulation Division, Department of Customer Service as follows:

The commentary within the Guide to Volume One of the National Construction Code (NCC) 2019 Amendment 1 may be of assistance. In relation to C2.12(a)(v) of the NCC Volume One, the Guide states ‘Reference to “installed in the building” means batteries hard wired into the building. This includes batteries used to provide power supply for fire safety equipment, lifts, pumps, energy storage from renewable energy sources and the like. It does not include batteries associated with removable data infrastructure, vehicles or batteries that can be readily removed or relocated (such as plug in UPS batteries).’

Subsequently, both OCN and EVC highlighted this correct interpretation to Credwell, who have taken no action to correct their publication:

<https://www.credwell.com.au/evs-and-the-bca/>

We continue to get enquiries from our members because of surveyors quoting this misinformation, causing confusion and delays in the installation of EV charging equipment in apartment buildings.

Building Structural Load misinformation

There are claims that heavier EVs have the potential to damage building fabric by exceeding carpark structural loads. While there is a weight penalty with EV Batteries, a short comparison of some popular vehicles shows similarity in respective weights between Electric and Internal combustion vehicles:

	Electric Vehicle (kg)	Internal Combustion Vehicle (kg)
Sedan		
Tesla type 3	1760 - 1844	
Mercedes C class		1590 - 1940
SUV		
Volvo XC 40 Recharge	1955 - 2192	
Volvo XC 40		1497 - 1733
Dual Cab Ute		
LDV eT60	2300	
Ford Raptor		2431
Ram 1500		2640
Large SUV		
Kia EV 9 (to be released)	2405 - 2664	
Toyota Landcruiser		2580
Volvo XC9		2111 - 2356

The real issue is that vehicles, including the increasing popularity of SUV, are all getting bigger and heavier.

<https://uk.motor1.com/news/622233/obesity-of-cars-new-industry-challenge/>

AS 1170 defines dead and live loadings as 3Kn/m² or about 300Kg/m² equating to about 3,880 Kg for a standard size car space (2.4m x 5.4m). This general increase in bigger and heavier vehicles, despite if they are electric or not, is generally not considered a significant structural load risk in residential car parks. If the size and weight of vehicles continues to be an issue, this should be addressed via the Australian standards.

This section and structural load misinformation is included for information only as the question of structural loading is frequently in the context of EV issues. As it is not specific to EVs, OCN assumes this topic is out of scope for this review.

Appendix A: Incidences of EV fires in Australia:

BEV & PHEV LiB Fires in Australia

All EVs were in normal operation at the time HV battery fire (thermal runaway) occurred:

All caused by damage to the battery pack from

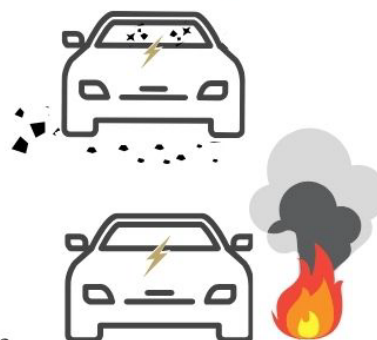
- Arson x 1
- External fire (structure burnt down) x 3
- Collision x 1
- Road debris x 1

None of the EVs:

- Were on charge at the time
- Were spontaneous or unexplained
- Caused a vapour cloud explosion

In these incidents:






- Most required 10,000+ litres of water
- 2 x were brought under control in <30 minutes
- There were no injuries requiring hospitalisation
- 1 x fatality, cause currently under investigation



Appendix B – Risk Profile

Lithium-ion battery categorisation for emergency response - common uses



Category	Smaller Devices	Personal Mobility Devices (PMD)	Light delivery EV (LDEV)	Road registered EV (EVs)	Battery energy storage systems (BESS)
OEM guidance	 No ERG	 No ERG	 No ERG	 Most ERGs available	 Most ERGs available
Risk	Low risk	High risk	Moderate risk	Very low risk	Very low risk

ERG = Emergency response guide, the presence of which indicates how serious the respective suppliers are about fire safety.

Appendix C – Draft OCN PMD Bylaw

By-Law – Management of Electronic and Personal Mobility Devices

Background

The Australian Competition and Consumer Commission (ACCC) in October 2023 released a Report about the dangers associated with keeping, using and maintaining Lithium – ion batteries. These batteries are found in many common household items.

The Report reveals that failures of these batteries can be “particularly catastrophic” due to the volatile liquid the batteries contain. Resulting fires can be self-sustaining, difficult to extinguish and may spontaneously re-ignite.

Fire and Rescue NSW states that between 1 January and 15 September 2023 there were 749 battery-related incidents; - up 16% on the same period in 2022. ACCC recommends that we become educated of the dangers of Lithium-ion batteries and observe best practices in respect of these as this continuing issue evolves in Australia and elsewhere.

In the interests of fire safety at the strata scheme, the owners corporation proposes the following by-law to better regulate storage, management and disposal of Lithium-ion batteries.

1. Interpretation

1.1 In this by-law, unless a contrary intention appears:

“**Act**” means the *Strata Schemes Management Act 2015*;

“**Battery**” means any Lithium-ion battery – branded or generic - used to power an Electronic Device or Personal Mobility Device;

“**Building**” means the building and common property comprising the Strata Plan;

“**Call-out**” means:

- a. the activation of heat, smoke or fire alarms forming fire safety equipment at the Scheme due to a Battery; and/or
- b. the ignition of a Battery or smoking of a Battery without activations referred to in a. of this definition resulting in the attendance of an authorised contractor or the Fire Brigade to investigate the cause and any consequential attendance by the Governmental Agency having jurisdiction over the Scheme to investigate the fire safety of Scheme.

“**Common Property**” means the common property of the Scheme;

“Designated Storage Area” means a Common Property area or areas in the Scheme identified as a safe storage area for Personal Mobility Devices;

“Electronic Device” means a commonplace electronic device in a domestic setting which requires charging via a Battery SUCH AS but not limited to:

- i. laptops,
- ii. smart watches,
- iii. tablets,
- iv. rechargeable power banks,
- v. e-cigarettes/vapes,
- vi. mobile phone,
- vii. cordless vacuum cleaners,
- viii. e-vehicles,
- ix. power tools,
- x. toys,
- xi. video games,
- xii. remote control model cars,
- xiii. drones,
- xiv. camping equipment,

but which does not include:

- i. a Personal Mobility Device; and/or
- ii. medical equipment which relies on Batteries;
- iii. wheelchairs, motorised mobility scooters or other devices necessary to aid mobility for disabled or mobility-impaired Owners and/or Occupiers;

“Governmental Agency” means any governmental or semi-governmental, administrative, fiscal or judicial department, commission, authority, tribunal, agency or entity.

“Lot” means a lot or part of a lot in the Strata Plan;

“Occupier” means an occupier of a Lot pursuant to a lease, sub-lease, tenancy agreement, licence, sub-licence, understanding or contract of any kind;

“Owner” means an owner of a Lot unless otherwise indicated;

“Personal Mobility Device” means an electrically charged personal transport device which requires charging via a Battery and includes e-bicycles, e-scooters and e-skate boards used for recreational or for employment purposes BUT excludes wheelchairs, motorised mobility scooters or other devices necessary to aid mobility for disabled or mobility-impaired Owners and/or Occupiers;

“Rules” means displayed rules of the Scheme’s owners corporation from time to time which apply to Owners and Occupiers concerning any of the following (without limitation):

- i. disposal of Batteries;
- ii. transportation of Personal Mobility Devices in and through Common Property
- iii. prohibiting or regulating keeping of a Personal Mobility Device in a corridor, stairwell or other nominated areas of Common Property;
- iv. prohibiting or regulating keeping of a Personal Mobility Device on a balcony of a Lot or in a Lot;
- v. use of a Designated Storage Area (if applicable); and
- vi. compliance with Battery storage and disposal requirements of a relevant Governmental Agency having jurisdiction over the Scheme or Electronic Devices or Personal Mobility Devices; and
- vii. charging Electronic Devices and Personal Mobility Devices.

“Scheme” means the strata scheme created on the registration of the Strata Plan including all subdivisions of the Strata Plan.

“Strata Plan” means Strata Plan No. xxxxxx.

1.2 In this by-law, unless the context otherwise requires:

- a. headings are for convenience only and do not affect the interpretation of the by-law;
- b. words importing the singular include the plural and vice versa;
- c. words importing a gender include any gender;

- d. an expression importing a natural person includes any company, partnership, joint venture, association, corporation or other owners corporation and any Governmental Agency;
- e. a reference to a person includes reference to the person’s executors, administrators, successors, substitutes (including without limitation, persons taking by novation) and assigns;
- f. a reference to anything includes a part of that thing;
- g. a reference to any statute, act, regulation, proclamation, ordinance or by-law includes all statutes, acts, regulations, proclamations, ordinances or by-laws, amending, varying, consolidating or replacing them, and a reference to a statute or act includes all regulations, proclamations, ordinances and by-laws issued under that statute or act;
- h. “include” or “including” and any variation of those words are not words of limitation;
- i. if any provision or part of a provision is held or found to be void, invalid or otherwise unenforceable, it shall be deemed to be severed from this by-law to the extent that it is void or invalid or unenforceable but the remainder of this by-law or the relevant provision shall remain in full force and effect; and
- j. any words defined in the Act appearing in this document have the same meaning as they do in the Act unless otherwise indicated or defined.

2. Scope of By-law

ELECTRONIC DEVICES and PERSONAL MOBILITY DEVICES

2.1 ELECTRONIC DEVICES

In the interests of fire safety an Owner or Occupier who keeps an Electronic Device in the Scheme **must not**:

- a. modify the Electronic Device’s Battery in any way; nor
- b. replace the Electronic Device’s Battery with any different Battery type not recommended by the manufacturer of the Electronic Device; nor

- c. install in the Electronic Device any additional Battery or a reconditioned Battery or a more powerful Battery than the original Battery recommended by the manufacturer for the particular Electronic Device; nor
- d. overcharge any Electronic Device; nor
- e. dispose of any Battery in the general waste receptacles, recycling waste receptacles, green waste receptacles of the Scheme or in any other waste receptacles anywhere in the building not designated clearly for Battery disposal.

2.2 In further interests of fire safety an Owner or Occupier who keeps an Electronic Device in the Scheme must dispose of all Batteries safely according to the Rules.

2.3 PERSONAL MOBILITY DEVICES

Personal Mobility Devices have a higher fire risk when compared with most other battery powered devices, particularly poorer quality cheap variants. To minimise the risk of harm to Owners and Occupiers:

- a. Only Personal Mobility Devices with a recognised regulatory compliance mark are permitted with in the Scheme; and
- b. Personal Mobility Devices are not to be charged inside the residential space of any Lot;
- c. Damaged Personal Mobility Devices promptly should be repaired by an authorized dealer and must not be brought into the Scheme until repaired
- d. Personal mobility devices must be stored and charged in the Designated Storage Area, if provided.

2.4 In the interests of fire safety at the Scheme an Owner or Occupier who keeps or otherwise houses a Personal Mobility Device in the Scheme (even on a temporary basis) **must not**:

- a. modify the Personal Mobility Device's Battery in any way; nor
- b. replace the Personal Mobility Device's Battery with any different Battery type not recommended by the manufacturer of the Personal Mobility Device; nor
- c. install in the Personal Mobility Device any additional Battery or reconditioned Battery or a more powerful Battery than the original Battery recommended by the manufacturer for the particular Personal Mobility Device; nor

- d. overcharge any Personal Mobility Device or leave the charging Personal Mobility Device unsupervised; nor
- e. dispose of any Battery in the general waste receptacles, recycling waste receptacles, green waste receptacles of the Scheme or in any other waste receptacles anywhere in the building not designated clearly for Battery disposal.

2.5 In the further interests of fire safety an Owner or Occupier who keeps a Personal Mobility Device in the Scheme must:

- a. comply with the Rules; and
- b. dispose of all Batteries safely according to the Rules.

3. Call-outs

3.1 The owners corporation must take reasonable steps to prevent fires and other hazards at the Scheme.

3.2 Where fire safety equipment or human error has triggered an alarm or suspected emergency in relation to a particular Lot, and

- a Call-out has occurred; and
- the fire safety equipment at the Scheme has not malfunctioned and it is not a false alarm; and
- the owners corporation is charged for the Call-out;

the Owner is liable for any charges (including fines) associated with that Call-out.

4. Liability and Indemnity

4.1 Owners remain solely responsible for any fines or penalties imposed on them or their Occupiers by any relevant Governmental Agency for failure to comply with its recommendations regarding Batteries and must indemnify the owners corporation from all claims, losses, expenses and costs incurred or damage to property or person suffered arising from

- a. failure to comply with Governmental Agency requirements and this by-law; and
 - b. the exercise of the owners corporation’s rights and duties under this by-lawand must pay the costs on demand.
- 4.2 Owners and Occupiers jointly and severally will be liable for any damage to the common property in the Scheme and/or a Lot and for loss or damage to personal property suffered as a result of their breach of this by-law.
- 4.3 Owners and Occupiers must indemnify the owners corporation against all claims and any actions, demands or expenses including legal and administrative expenses incurred in relation to charges referred to in clause 4.1 and 4.2.
- 4.4 Owners severally must indemnify the owners corporation against all and any claims, actions, demands or expenses including legal and administrative expenses incurred in relation to:
 - a. the exercise of its rights under this by-law; and
 - b. enforcement of this by-law.
- 4.5 This by-law confers on the owners corporation the following additional functions, powers, authorities and duties:
 - a. the function to preserve and monitor fire safety at the Scheme;
 - b. the power to regulate keeping and disposal of Batteries and Personal Mobility Devices;
 - c. the authority to issue a notice to the relevant Owner or Occupier if it is reasonably suspected that a Personal Mobility Device and/or Battery is being kept or housed in contravention of this by-law; and
 - d. the duty to prosecute the Owner or Occupier for breach of this by-law in a court of competent jurisdiction and seek all costs (including legal costs) associated with judgment against the relevant Owner or Occupier.