

**Submission  
No 5**

## **ELECTRIC AND HYBRID VEHICLE BATTERIES**

**Organisation:** Owners Corporation SP50705 Domain Apartments

**Date Received:** 22 November 2023

DOMAIN APARTMENTS



**DOMAIN APARTMENTS**

**SUBMISSION TO**

**JOINT STANDING COMMITTEE ON ROAD SAFETY  
ELECTRIC AND HYBRID VEHICLE BATTERIES INQUIRY 2023**

***23 Nov 2023***

## DOMAIN APARTMENTS

### EXECUTIVE SUMMARY

*Our Owners Corporation, of a relatively large residential apartment building, considers it has a general duty of care obligation to its residents to take action to either eliminate hazards or mitigate their likelihood and consequences, so far as reasonably practicable.*

*One such set of hazards is presented by Electric Vehicles (EV) high-capacity traction batteries particularly the hazards they present by their very presence in the building, exacerbated through charging those batteries in the garages.*

*While EV counter-measures are certainly required, the hazards associated with traction batteries of all E-mobility devices and their chargers must be part of a comprehensive statutory regime governing their use. These include E-Bikes, E-Scooters and E-Golf Buggies. They present an equal, if not greater hazard, being out of public view, tucked away in apartment units or storage units, left on charge overnight, likely not well-controlled, protected or supervised.*

*The growing number of E-battery induced fire incidents reinforces the need for immediate affirmative action to assign responsibility and accountability for preventing potentially serious or fatal outcomes. This is particularly so in the context of residential apartment buildings.*

*Our Owners' principal concerns are the likelihood, consequences and preventative measures related to extremely high-intensity fire and spread of noxious gas in the confines of a residential apartment building caused by the spontaneous combustion of all types of EV traction batteries.*

*Authoritative, comprehensive and definitive policy, advice, guidance, laws and mandatory safety standards, specifications and requirements are required from relevant public authorities that specify what preventative equipment needs to be installed in residential apartment buildings to combat the effect of EV-related traction battery fires.*

*While this would address the technical / engineering, health and safety aspects, the issue of E-traction batteries hazards generates a range of complex, contentious and inter-related legal, fairness/equity, financial, social, health, marketing and logistical considerations in the apartment building context. Hence, measures to address these aspects also need to be included.*

*Import restrictions are required on, and border surveillance of, online purchases of E-mobility devices and their charging equipment. Risk Management rule #1 is to eliminate the hazard – stopping their entry into the country is the first line of defence.*

*The absence of comprehensive, definitive policy, legislation, regulations and direction is such that we Owners Corporations are unable to develop enforceable by-laws.*

*The perceived "blind eye" to E-Scooter use on public roads and paths makes Owners Corporations powerless in attempting to institute enforceable risk-mitigating by-laws. Effective and enforceable laws, regulations, standards and controls are required to eliminate the associated risk to their use on Owners Corporations common property.*

*This pervasive threat can only be resolved by establishing multiple layers of defence. While Owners Corporations can introduce certain immediate hazard control measures, enactment of authoritative, statutory 'backup' from public authorities would empower them to put in place enforceable by-laws to eliminate or minimise the dangers to lives and property of residents and incidents' first responders.*

*The proposal herein to amend the extant EV Building Grants Program is another layer of defence – it should generate an effective, disciplined risk management regime.*

## DOMAIN APARTMENTS

### DOMAIN APARTMENTS SUBMISSION

#### 1. Purpose of Submission

The purpose of this Submission is, from the perspective of Owners of a residential apartment building, to express our deep concern at the absence of definitive EV-related policy, legislation, regulations, standards or direction associated with the hazards presented by batteries of electrically-operated mobility devices. Without this, we are currently unable to develop enforceable by-laws

The Submission proposes actions that the Inquiry might consider for early implementation.

#### 2. Outcome Sought

The outcome we seek is timely, authoritative Government policy and direction sufficient to empower Owners Corporations to enact enforceable EV-related risk-mitigating by-laws that address *all manner of* E-mobility devices with traction batteries. Such policy and direction should be comprehensive, address all related operational, technical, financial, health, legal, social and safety perspectives, and be aligned at the Local, State and Commonwealth levels.

The proliferation of non-vehicle E-mobility devices should draw at least equal consideration and near-term risk management policy and statutory coverage.

#### 3. Scope

Recognising the Inquiry's Terms of Reference, this Submission addresses the hazards caused by traction batteries in electric and hybrid motor vehicles – their presence, use and maintenance in a residential apartment building, the hazard exacerbated by charging those batteries on-site.

Our Submission is written from the positive perspective of residential apartment building owners becoming "*EV-ready*" – preparing for the increasing presence in the community of electrically-powered mobility devices be they cars, bikes, buggies, scooters or wheelchairs.

This Submission does not seek to discuss or advocate the various pro's and con's of EV motor cars per se, only the *risks* associated with their *use and support* in the residential apartment building context. We are seeking to generate pragmatic governance and management safety outcomes – not reviving the spectre of the man with red flag walking in front of horseless carriages!

The Submission takes a risk management approach (i.e. context; hazards; likelihood, consequence; controls; communication) applied to the special nature of the risks posed by the traction batteries of E-mobility devices. The aim is to not only protect the lives and property of our residents, but also that of emergency services personnel (first responders) in the event of their having to deal with an EV-induced incident in a residential apartment building.

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### 4. Background

As recognised in the Inquiry Terms of Reference, this submission acknowledges media reports of recent serious EV traction battery-related incidents, organisational responses from Government authorities and other related initiatives, and how they relate to our Domain Apartments context.

It also acknowledges the concerns expressed, and advice given, by various authorities (e.g. ACCC, AMSA), along with the considerable analysis and research being undertaken by Defence, CSIRO and public safety authorities e.g. Fire and Rescue NSW.

We too adopted the “EV-Ready” posture in 2022 in Owners Strata Committee governance and management deliberations.

Toxic vapour and particulate matter cloud of flammable gases from EV batteries fires (including hydrogen fluoride and hydrogen chloride) pose respiratory and explosion risks, along with battery cell debris projectiles, and risk of fire re-ignition. Lithium ion battery cells expel hydrogen, carbon monoxide, carbon dioxide, hydrogen fluoride, hydrogen chloride, hydrogen cyanide, organic solvents, ethane, methane, hydrocarbons, sulphur dioxide, nitrogen oxides, among others.

A burning conventional internal combustion engine (ICE) car may reach 815 degC; an EV up to 2,760 degC.

The high-voltage cables and components also present a risk of electrocution to nearby personnel and emergency responders at all incidents involving electric vehicles. An electric vehicle that has been involved in a collision, a fire, or has been submerged, must be treated with caution as the high voltage battery pack may be compromised. Damaged EV batteries may ignite hours, days, or even weeks after the initial incident.

Research has found that just over a third of reported EV traction battery fires occurred while connected to energised AC or DC charging, or within one hour of being disconnected from energised charging.

The growing number of reported E-battery induced fire/gas incidents reinforces the need for immediate affirmative action to assign responsibility and accountability for preventing potentially serious or fatal outcomes.

### 5. Discussion

**General** This subject has generated a range of complex, contentious and inter-related technical, operational, legal, fairness/equity, financial, social, health, safety, marketing and logistical issues in the apartment building context. Our Owners have a number of serious concerns regarding the associated risks and management of extremely high-intensity fires and emanation of noxious gases caused by spontaneous combustion of EV traction batteries.

**“EV Bowers”** A simple question was posed by Owners. Acknowledging the drive to encourage EV uptake but, if we don’t currently provide petrol bowers in our residential apartment building, why should we provide “EV-bowers”?

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**Duty of Care** Our Owners Corporation considers it has a general duty of care obligation to its Owners and Residents to take action to either eliminate all manner of hazards or mitigate associated likelihood and consequences, so far as reasonably practicable.

**Hazards** One such set of hazards is presented by electrically-powered ambulatory / mobility devices / vehicles, particularly the hazards they present by their very presence in the building, exacerbated through charging their high-capacity traction batteries either in the garages or in apartments.

**Media Reports Implications** The increasing substantive evidence is that charging high capacity traction batteries fitted to electrically-powered cars (including hybrids), bikes, scooters and other motorised ambulatory devices, presents a credible hazard in our building were we to permit their presence.

The reported incidents certainly highlight the likelihood of such events occurring in a residential apartment buildings such as ours viz:

- The Sun Herald 29 Oct 23 where regulators, governments and strata schemes are reportedly grappling with how to manage a rise in fires caused by faulty or misused e-bike chargers after Sydney fire crews were called to three incidents within 24 hours in the past week. A two-storey home was destroyed when an E-bike lithium battery that had been left on charge exploded in Oyster Bay on Thursday 26 Oct.
- On Friday 27 Oct, an E-bike with a homemade charger caused another blaze in Wentworthville.
- Reports of golf buggy battery-induced fires at a number of golf clubs: left on charge overnight – burnt down the storage shed and/or golf clubhouse.
- NSW fire crews have attended at least 40 fires caused by lithium-ion batteries in E-bikes and E-scooters this year, up from 22 across all of 2022.
- While quality products have safety switch-off features to prevent overheating, there have been an increasing number of “thermal runaway incidents”, where a lithium battery overheats to the point of explosion, also emitting toxic gas. The fires are prone to reignite once extinguished.
- The Australian Competition & Consumer Commission (ACCC) expressed concern about lithium-ion batteries overheating or exploding, particularly when chargers were mixed and matched and left running after a device had fully charged - it has received 254 product safety reports about lithium-ion batteries since April 2017.

The NSW branch of the Strata Community Association stated it was not aware of strata schemes that had enforced by-laws around E-bikes.

**Concern** Our principal concerns are therefore the likelihood and consequences of high-intensity fire and noxious gas in the confines of a residential apartment building.

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There do not appear to be any authorised/approved, definitive legislation, standards, regulations, specifications or authoritative direction from responsible public authorities as to what equipment/infrastructure is required to be installed to counter the effects of such extremely hazardous events.

**Other Related Issues** However two related “*other issues*” are of serious concern to our Owners. Firstly, the absence of such definitive legislation, regulations or direction is such that we Owners Corporations are *unable to develop enforceable by-laws*, the principal underpinning of Owners governance and management.

Secondly, the coverage of such laws, regulations, standards and direction must encompass *all E-mobility devices*.

**Current Standards** While we have a sturdy building, constructed from reinforced concrete floor slabs and beams, supported by a series of reinforced concrete columns and walls, it is not known how our two garages, enclosed within the building structure (on the basement and ground floors), with ‘conventional’, statutory fire mitigation equipment would contain extremely high-temperature fires and noxious gases generated by EVs. The same applies to fires in apartment units. Currently required fitted sensors, alarms and firefighting equipment are not designed to counter the high-intensity hazards presented by the traction batteries in E-mobility devices.

Having targeted, comprehensive, authoritative, enforceable Government policy, legislation, regulations and standards would provide a solid backbone for the Owners Corporation to practically achieve its duty of care obligation.

**Other E-mobility Devices** While motor vehicles are the principal subject of the Inquiry, the growing prevalence of E-Bikes, E-Scooters and E-Golf Buggies – either solely by their presence or when being charged – present an equal, if not greater hazard, by their being not so publicly “visible” – tucked away in apartment or storage units, left on charge overnight, likely not well-controlled, protected or supervised.

That these devices and their batteries can be purchased online from overseas suppliers, evasion of import restrictions (should they exist) is relatively easy. There appears to be no import restrictions on cheap chargers or surveillance of online E-bike / scooter / appliance purchases. Risk Management rule #1 is to eliminate the hazard – stopping their entry into the country is the first line of defence.

**E-Scooters** E-Scooters, where ownership is permitted in NSW, but their use prohibited on public roads/paths and only allowed on private property - is somewhat incongruous in the very least. The fact that law enforcement authorities do not appear to apprehend those violating the law invites their growing use. This apparent “blind eye” to E-Scooter use on public roads and paths makes Owners Corporations, trying to institute risk-mitigating by-laws, practically powerless.

Also, “private property” in the residential Strata context is “Common Property” – what lawful backup do Owners Corporations have to similarly prohibit their use on common property – let alone instigate measures to eliminate the risk, prevent the likelihood and consequence of fire and noxious gas from spontaneous combustion in apartments?

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**Insurance Implications** The effect on Building Insurance is another downside of the insidious and pervasive presence of E-mobility devices.

While we do have a solidly-built building structure, it is not known how our two garages, enclosed within the building structure (on the basement and ground floors), with 'conventional', statutory fire mitigation equipment would contain the extremely high-temperature fires and noxious gases generated by EV fires / combustion. The same applies to fires in apartment units: currently required fitted sensors, alarms and firefighting equipment are not designed to detect and counter the hazards presented by the traction batteries in E-mobility devices.

This and the absence of enforceable regulation provides uncertainty = Risk. Hence, a relatively defensible excuse for Insurance companies to hike premiums. It is unlikely that E-Scooter personal liability insurance would cover a high-rise apartment building conflagration sparked by its battery being left to charge overnight.

**Risk Controls** This context of the dearth of policy direction, laws and mandatory safety requirements reinforces the need for an Owners Corporation to take immediate affirmative action to demonstrate responsibility and accountability for preventing potentially serious or fatal outcomes in Domain Apartments.

Our Owners have not been impotent "*bystanders*" to this looming danger. So far as is reasonably practicable, certain risk management controls have been instituted to reduce the likelihood and consequence of E-battery induced incidents. We have adopted a disciplined risk management approach viz.: establish the relevant context; assess the likelihood and consequences; establish controls to eliminate hazards or mitigate risk; and communicate to our Owners and Residents.

Three specific measures have been adopted. Firstly, in 2022 establishment of an "*EV-Ready*" posture – for awareness and preparedness by having done the necessary leg-work to be fully-informed as a basis for triggering action at the optimal point in time. Secondly, creation of an EV Sub Committee – to focus Owners' governance and management of this risk. Thirdly, establishment of an EV Register – primarily to identify to first responders the scope, nature and location of the hazardous devices.

Notwithstanding, numerous reports and discussions thereof by the Strata Committee have elicited the growing angst, particularly that of being perceived as hamstrung by the lack of authoritative laws, regulations, standards and direction.



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**Further Risk Controls** Additional risk controls being contemplated are:

- All E-powered mobility devices, as a condition of tenancy/occupation, must be registered with Building/Strata Management (make, model, location, charging arrangements).
- E-Motor Vehicles (including hybrids): institute a requirement of Owners, if they require the capability, to install and operate (at their cost) associated charging devices that can be independently monitored for power consumption to allow Strata cost recovery.
- Charging equipment (charging cable and/or unit) to be electrically compliant with AS/NZS 3000 and installed by a qualified electrician.
- Appropriate sensors, alarms and firefighting / gas control equipment to be installed in the vicinity of the charging point.
- E-Scooters: outright prohibition of their presence on the property, contravention of which be considered a breach of tenancy/occupation.
- Mandatory monitoring and surveillance of E-device postal deliveries.
- E-Bikes: rigorous monitoring of their presence and charging.
- Damaged E-devices to be placed and kept in an open area at least 15 metres from other vehicles, buildings, and/or other exposures.
- E-Chairs: those mobility devices for health reasons (e.g. E-Chairs) be considered a separate special category that should not be banned. However, as for all permitted E-devices, the Owners Corporation should require assurance (via registration) of the device's integrity (make, model, meets AUS specifications and regulations and is properly maintained) and its normal location in the Building.

Some of these measures present a not inconsiderable expense and potentially outweigh the overall benefits of, and business case for, permitting EVs in the building. However, avid EV owners may seek to challenge their right to install EV chargers and potentially monetise the capability. This raises another set of contentious legal issues for Owners Corporations to contend with – again, at not inconsiderable expense and time.

It is clear that any by-laws established to implement such risk controls and enforce compliance need firm statutory underpinning. Penalties for non-compliance would need to be commensurate with the lethality consequences of an E-battery incident.

**NSW EV Building Grants Program** This was announced on 16<sup>th</sup> October 2023 as a means to co-fund Owners Corporations to install / retrofit the required electrical infrastructure to enable apartment residents to charge their vehicle at home. It's ostensible objective is to accelerate EV uptake and to create a range of exemplar EV-ready residential buildings.

For consideration by the Inquiry is an amendment to this Program. The Assessment required in Stage 1 should include a mandatory Risk element – to assess the likelihood, consequences and controls required to avoid or minimise the hazards posed by all E-powered mobility devices. Before commencement of Stage 2, the operational, financial, engineering, legal and technical requirements to control such hazards must become mandatory elements of implementation.

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### 6. **Summary**

The growing number of E-battery induced fire incidents reinforces the need for immediate affirmative action to assign responsibility and accountability for preventing potentially serious or fatal outcomes. This is particularly so in the context of residential apartment buildings.

This pervasive threat can only be resolved by establishing multiple layers of defence, with associated accountability and responsibility. While EV counter-measures are certainly required, the hazards associated with traction batteries of all E-mobility devices and their chargers must be part of a comprehensive statutory regime.

Authoritative, comprehensive and definitive policy, advice, guidance, laws and mandatory safety standards, specifications and requirements are required from relevant public authorities that specify what equipment needs to be installed in residential apartment buildings to combat the effect of EV-related traction battery fires.

While this would address the technical / engineering, health and safety aspects, the issue of E-traction batteries hazards generates a range of complex, contentious and inter-related legal, fairness/equity, financial, social, health, marketing and logistical considerations in the apartment building context. Hence, measures to address these aspects also need to be included.

As a first line of defence, import restrictions and border surveillance are required of online purchases of E-mobility devices and their charging equipment.

While Owners Corporations can introduce certain immediate hazard control measures, they need authoritative, statutory 'backup' to empower them to put in place enforceable by-laws to eliminate or minimise the dangers to lives and property of residents and incidents' first responders.

The proposal herein to amend the extant EV Building Grants Program is another layer of defence – it should generate an effective, disciplined risk management regime.

### 7. **Conclusion**

Our Owners fully support the Joint Standing Committee on Road Safety's Inquiry into hazards posed by electric and hybrid vehicle batteries. The initiative presents a timely opportunity to shape policy and actions to remedy clear and present dangers – to allow practical measures to be put in place. They would substantively empower Owners Corporations to implement enforceable by-laws so that then can play their part in protecting our community's lives and property.

We seek your consideration of this Submission.

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