Joint Standing Committee on
Road Safety (Staysafe)

PARLIAMENT OF
NEW SOUTH WALES

Electric and hybrid vehicle batteries

Report 1/58 – September 2024

New South Wales Parliamentary Library cataloguing-in-publication data:

A catalogue record for this
book is available from the
National Library of Australia

ISBN: 978-1-925214-49-9

The motto of the coat of arms for the state of New South Wales is “Orta recens quam pura nites”. It is written in Latin and means “newly risen, how brightly you shine”.

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Chair's foreword

New South Wales has seen a marked uptake of Electric Vehicles (EVs) in recent years. We have also seen more personal mobility devices (PMDs), such as e-bikes, on our roads and cycle paths. These technologies are critical to decarbonising transport and supporting NSW's energy transition.

However, the uptake of electric vehicles has raised concerns about EV battery safety and fire risks. In seeking to respond to these concerns, the Joint Standing Committee on Road Safety initiated this inquiry to ensure that the risks of electric and hybrid vehicle batteries are better understood and comprehensively addressed.

During the course of the inquiry we heard from a wide range of stakeholders, including first responders, industry representatives, automotive mechanics, technical experts, the NSW Government and members of the public.

The Committee found that EV fires are relatively rare, and less common than internal combustion engine (ICE) vehicle fires. This is due, in part, to effective regulations and design standards that are applied to newly sold EVs in Australia. However, when EV battery-related fires do occur, they are severe and more difficult to extinguish than ICE vehicle fires.

We heard that PMDs are more likely to catch fire than EVs, and that this is due, in part, to the prevalence of low-quality imports and gaps in the regulation of these devices. Pleasingly, during the course of the inquiry the Committee heard that the NSW Government had strengthened regulations for e-bikes and other PMDs, requiring them to comply with more stringent standards and testing requirements. The Committee welcomes this development and recommends that these regulations are backed by strong enforcement, particularly online, where we heard that riskier, low-quality PMDs can still be sold. In addition, we recommend that the NSW Government advocate for the nationwide adoption of common standards for PMDs.

Emergency services workers play a crucial role in keeping the community safe, including from EV battery fires. We heard about the dangers that first responders can face when dealing with EV battery fires, such as intense flames, toxic gases and the risk of re-ignition after a fire has been extinguished. We also found that there were information and data gaps about injuries and the long-term effects of exposure to EV battery fires. As a result, the Committee recommends that NSW Government agencies collect data on injuries and health impacts from EV battery fires to support further research and better manage any identified health risks.

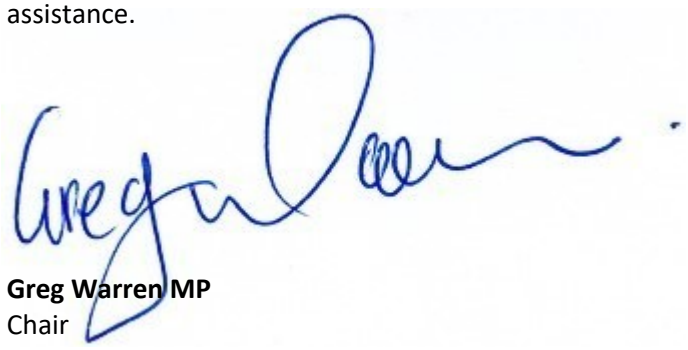
Importantly, the Committee has also made recommendations aimed at keeping emergency services workers safe, such as sector-wide training on safe management of EV battery fires, ensuring that all emergency services workers have effective personal protective equipment (PPE), and that PPE is effectively decontaminated from EV battery fires.

We heard that automotive workers, such as mechanics, also face risks from handling EV batteries, such as electrical hazards and chemical exposure. Inquiry participants called for further training and qualifications for automotive workers to address these risks. The Committee acknowledges that the NSW Government is considering developing specialised qualifications and training for workers that repair and service EVs and submits that, if

implemented, these will ensure that automotive workers have appropriate skills to handle EVs safely.

To keep consumers safe, it's important that they know where to buy reputable products, and how to use and charge them safely. The Committee notes the existing work being done by the NSW Government to educate consumers and recommends that any existing campaigns should be co-ordinated to ensure that consumers in have consistent, clear and accessible information on how to buy high-quality EVs and PMDs that are safe to use, and best practice for handling these vehicles.

On behalf of the Committee, I would like to sincerely thank everyone who contributed to this important inquiry, through your submissions and your evidence at the public hearings. I thank my fellow Committee members for their invaluable input and the collegiate way in which they worked together throughout this inquiry. And I thank Committee staff for their ongoing assistance.



Greg Warren MP
Chair

Findings and recommendations

Chapter One – Electric vehicle and personal mobility device fire risks

Damaged electric and hybrid vehicle batteries can pose fire risks

Summary

- Electric vehicle and personal mobility device batteries can present fire risks if they are damaged.
- EVs generally pose a lower risk of fire compared to internal combustion engine vehicles.

Finding 1

Damaged, defective or poorly handled electric and hybrid vehicle batteries pose fire risks.

Risk factors for electric and hybrid vehicle fires

1.1 The Committee heard that electric vehicle (EV) batteries can present fire risks if they are damaged. This can occur through collision or water damage.

1.2 Fire and Rescue NSW told us that when EVs have collisions and sustain damage there can be an increased risk of fires. Where lithium-ion batteries receive a mechanical shock, for example, as a result of a collision, it can be a trigger for the disintegration of the battery and fires to occur.[1] EV FireSafe similarly told us that collisions can tear open or otherwise damage battery packs and that this can cause fires.[2]

1.3 We also heard that moisture was a risk factor for battery fires. EV FireSafe told us that flooding events could cause water ingress into battery packs, increasing the risk of fires.[3]

Comparing EV and internal combustion engine vehicle fire risks

1.4 Inquiry participants told the Committee that EVs generally posed a lower risk of fire compared to internal combustion engine (ICE) vehicle risks. The NSW Government told us that EVs are much less likely to catch fire compared to ICE vehicles, with available data indicating that the fire risk is 80 times greater for petrol and diesel vehicles.[4]

1.5 The Insurance Council of Australia told us that in the United Kingdom EV fires are much less common than fires in ICE vehicles. Similarly, in Sweden, from 2018 to 2022 ICE vehicles experienced more fires than passenger vehicles that run on

[1] Commissioner Jeremy Fewtrell AFSM, Commissioner Fire and Rescue NSW, Australasian Fire and Emergency Service Authorities Council & (Fire and Rescue NSW), Transcript of evidence, 30 April 2024, p 7.

[2] Ms Emma Sutcliffe, Director, EV FireSafe, Transcript of evidence, 26 March 2024, p 4.

[3] Ms Sutcliffe, EV FireSafe, Transcript, p 4.

[4] Submission 19, NSW Government, p 3.

lithium ion batteries. At the time of analysis there were around 600,000 EVs on the road and 4.4 million vehicles powered by other fuels.[5]

1.6 However, we heard that EV fires were more intense and difficult to extinguish. EV FireSafe told us that it could take between three and five hours to put out an EV battery fire, compared to under half an hour for ICE vehicles.[6]

Personal mobility devices are more likely to have defective batteries that pose fire risks

Summary

- Batteries used in personal mobility devices present higher fire risks than batteries used in other electric vehicles.

Finding 2

Personal mobility devices pose higher fire risks than other electric vehicles.

1.7 The Committee heard that defective batteries were a potential cause of fires and that these were more likely to be found in personal mobility devices (PMDs), such as e-bikes and e-scooters.

1.8 EV FireSafe told us that the risk of fires and other safety issues were more acute with e-bikes and e-scooters.[7]

1.9 Bicycle NSW told us that fires in e-bikes were often the result of poor quality, poorly manufactured products which were non-compliant with standards.[8] They also told us that fires were sometimes associated with e-bikes that were imported illegally and sold online or in retail stores.[9]

1.10 We also heard that batteries in PMDs could pose fire risks if they are overcharged and that poor quality battery management systems, which control the charge and temperature of batteries, can result in overcharging. EV FireSafe gave us an example of this occurring in the Philippines, where an e-bike caused a fatal fire because the battery management system and cells were poor quality and did not stop charging at 100%.[10]

1.11 The Committee heard that fire risks of PMDs powered by lithium-ion batteries were significantly higher than in EVs. The NSW Government noted that EVs have more sophisticated designs than PMDs, such as advanced cooling systems to keep the batteries at optimal temperatures during driving and recharging. This makes EV batteries safer than batteries used in e-scooters and e-bikes.[11] The Australian Competition and Consumer Commission (ACCC) told us that there have

[5] Ms Alix Pearce, Senior Manager, Climate & Social Policy, (Insurance Council) of Australia, Transcript of evidence, 26 March 2024, p 51.

[6] Ms Sutcliffe, EV FireSafe, Transcript, p 10.

[7] Ms Sutcliffe, EV FireSafe, Transcript, p 2.

[8] Mr Peter McLean, Chief Executive Officer, Bicycle NSW, Transcript of evidence, 26 March 2024, p 30.

[9] Submission 23, Bicycle NSW, p 2.

[10] Ms Sutcliffe, EV FireSafe, Transcript, p 4.

[11] Submission 19, NSW Government, p 5.

been increasing battery safety incidents associated with light electric vehicles, including e-bikes and e-scooters.[12] The Electric Vehicle Council told us that since EVs had a more stringent regulatory environment, they were far less likely to catch fire than PMDs.[13]

Battery fires pose significant physical risks

Summary

- EV battery fires can cause significant physical risks such as intense, uncontrollable flames, reignition, contaminated water runoff and electric shocks.

1.12 The Committee heard that the key physical risks from EV batteries included thermal runaway, venting of toxic gases, secondary ignition, contaminated water runoff and electric shocks.

1.13 Fire and Rescue NSW and the Australasian Fire and Emergency Service Authorities Council (AFAC) told us about thermal runaway, a chemical reaction involving intense, uncontrollable heating. Thermal runaway is a self-propagating fire where the cells in the battery decompose. Each cell generates heat that triggers other cells around it, continuing until the battery consumes itself.[14]

1.14 EV FireSafe told us that thermal runaway can produce high-intensity, jet-like directional flames.[15] Thermal runaway was also raised as a risk by stakeholders ranging from members of the public, the City of Sydney and the Motor Traders' Association of NSW.[16]

1.15 The Committee heard that EV fires can also result in the violent release of toxic, corrosive and potentially flammable vapours. EV FireSafe told us about new risks from these vapours, such as vapour cloud explosion. We heard that vapour cloud explosion was a particular risk in enclosed or covered areas such as in garages or carparks.[17] The NSW Government also told us that venting of gases could produce high energy projectiles.[18]

1.16 We heard that EV batteries could re-ignite without warning after the initial fire. The NSW Government told us that secondary ignition could occur during recovery, transport, storage and disposal of EV batteries.[19] EV FireSafe told us that, based on their research, lithium-ion batteries can reignite in around 10 per

[12] Submission 9, Australian Competition & Consumer Commission (ACCC), pp 1-2.

[13] Submission 7, Electric Vehicle Council (EVC), p 7.

[14] Commissioner Fewtrell, Fire and Rescue NSW, Transcript, p 7.

[15] Submission 8, EV FireSafe, p 10.

[16] Submission 7, EVC, p 4; Submission 11, Motor Traders' Association NSW (MTA NSW), p 9; Submission 14, (Allianz) Australia, p 2; Submission 16, Owners Corporation Network (OCN), p 6; Submission 17, (Insurance Council) of Australia, p 1; Submission 30, (Encap) Fire & Safety Pty Ltd, p 5.

[17] Mr Dan Fish, Technical Director, EV FireSafe, Transcript of evidence, 26 March 2024, p 10.

[18] Submission 19, NSW Government, p 11.

[19] Submission 19, NSW Government, p 4.

cent of fire incidents, and that six tow truck drivers have been hospitalised following secondary ignition of EV battery fires.[20]

1.17 The Committee heard that EV fires may require complex and protracted extinguishment and cooling. EV FireSafe told us that it could take between three and five hours to put out an EV battery fire.[21]

1.18 We heard that the large amounts of water used to cool lithium-ion battery fires can be toxic and that contaminated water runoff from EV battery fires can pollute soil, groundwater and nearby waterways.[22]

1.19 The NSW Government also told us about the risk of electric shock or electrocution. This is from the high voltage electricity stored within the EV's battery, electrical components, cabling, connected charging equipment and associated energy storage infrastructure.[23]

[20] Submission 8, EV FireSafe, p 16.

[21] Ms Sutcliffe, EV FireSafe, Transcript, p 10.

[22] Submission 19, NSW Government, p 4; Submission 15, Australasian Fire and Emergency Service Authorities Council (AFAC), p 7.

[23] Submission 19, NSW Government, p 11.

Chapter Two – Regulation of EV and PMD batteries

Standards and quality control for new EV batteries are adequate, but regulatory gaps exists for converted EVs

Summary

- Electric and hybrid vehicles must comply with effective standards, including testing requirements.
- A regulatory gap exists for EVs that have been converted from ICE vehicles. However, the Federal Government is in the process of developing guidelines for vehicle modifications.

Finding 3

The regulatory framework and standards for new EVs is adequate.

Regulation of new EVs

2.1 The Committee heard that EV batteries are subject to effective regulations. These regulations are updated to match international standards.

2.2 Currently, all new EVs imported from overseas must comply with relevant Australian Design Rules (ADR).[24] In New South Wales, the ADRs are implemented by Transport for NSW as part of its vehicle registration process.[25]

2.3 The ADRs contain specific requirements related to EV batteries.[26] They require EVs to have safety protections in place to protect occupants and first responders from electric shocks, fires and explosions of chemical leakage during and after a collisions.[27] They also require testing a sample battery against known risks, such as vibration, crashes, temperature changes and overcharging.[28]

2.4 The ADR requirements relating to EVs are based on international United Nations regulations on EV safety and incorporate many of its requirements around safe design, manufacture and testing.[29]

2.5 Stakeholders supported the EV regulations in the ADRs. The Australian Building Codes Board, for example, expressed confidence in the EV standards set out in

[24] Ms Carla Hoorweg, Chief Executive Officer, Australasian New Car Assessment Program ((ANCAP) Safety), Transcript of evidence, 26 March 2024, p 7.

[25] Submission 19, NSW Government, p 2.

[26] Mr Gary Rake, Chief Executive Officer & Head of Division, Australian Building Codes Board (ABCB), Transcript of evidence, 26 March 2024, p 12.

[27] Submission 4, Australasian New Car Assessment Program ((ANCAP) Safety), p 2.

[28] Submission 19, NSW Government, p 19.

[29] Submission 18, Federal Chamber of Automotive Industries (FCAI), p 2 & Attachment, *FCAI response to: ACCC – Lithium-ion batteries Issues Paper December 2022*, p 7; Submission 19, NSW Government, p 19; Submission 22, Australian Automotive Dealer Association (AADA), p 8.

the ADRs.[30] The Federal Chamber of Automotive Industries submitted that regulation outside of the ADRs was unnecessary for EVs.[31]

2.6 In addition to the ADRs, the Federal Government also carries out independent random audit checks.[32]

Regulation of converted EVs

2.7 In contrast, the Committee heard that there is a regulatory gap for EVs that are converted from ICE vehicles.[33] Converted EVs are not subject to same standard of regulation when compared to new manufactured EVs.[34]

2.8 The current safety standards only apply to the testing of battery cells or vehicles that are newly manufactured.[35] EV FireSafe said that there is a lack of clear guidance to ensure minimum standards and quality testing for converted EVs.[36]

2.9 Written-off vehicles can be dismantled for spare parts.[37] The Committee heard that spare parts from a written-off vehicles are sometimes used in conversions, and that the quality of the parts varies significantly.[38]

2.10 The Federal Chamber of Automotive Industries said that the use of non-genuine parts and accessories can seriously compromise the integrity of EVs.[39] The AFAC submitted that the supply of second hand EVs should be tightly regulated to ensure the quality and safety of second-life batteries.[40]

2.11 Transport for NSW advised that the National Transport Commission is currently leading a process to establish guidelines for vehicle modifications.[41] The Committee notes the work being done by the National Transport Commission and encourages Transport for NSW to actively partner in this work with input from industry and other stakeholders.

[30] Mr Rake, ABCB, Transcript, p 12.

[31] Submission 18, FCAI, Attachment, p 9.

[32] Ms Hoorweg, ANCAP Safety, Transcript, p 8.

[33] Submission 30, Encap, p 12; Ms Sutcliffe, EV FireSafe, Transcript, pp 2-3; Mr Fish, EV FireSafe, Transcript, p 3.

[34] Ms Sutcliffe, EV FireSafe, Transcript, p 3; Mr Fish, EV FireSafe, Transcript, p 3.

[35] Mr Fish, EV FireSafe, Transcript, p 5.

[36] Mr Fish, EV FireSafe, Transcript, p 5.

[37] Transport for NSW, *Written-off heavy vehicles*, webpage, NSW Government, viewed 25 June 2024.

[38] Mr Fish, EV FireSafe, Transcript, p 5.

[39] Submission 18, FCAI, Attachment, p 9.

[40] Submission 15, AFAC, p 9.

[41] Mr John Hardwick, Executive Director Asset Management and Acting Head of Transport Safety, Safety Environment and Regulation Division, Transport for NSW (TfNSW), Transcript of evidence, 26 March 2024, p 41.

The NSW Government has addressed gaps in the regulation of PMD batteries

Summary

- Standards for PMDs have recently been strengthened in New South Wales, however, PMD standards are not consistent nationally.
- Enforcement of the new standards is needed to ensure that PMDs are safe.

Recommendation 1

That NSW Fair Trading carry out ongoing inspections of personal mobility devices, to ensure that they comply with relevant safety standards.

Recommendation 2

That NSW Fair Trading work with e-commerce platforms to remove listings of personal mobility devices that do not demonstrate compliance with New South Wales safety standards.

Recommendation 3

That the NSW Government advocate for reform at the Federal level to strengthen the quality control of personal mobility devices and ensure consistent safety standards across all jurisdictions.

Enforcement of new PMD standards in New South Wales

2.12 During the course of this inquiry, the regulation of PMDs in New South Wales was strengthened, with the NSW Government implementing new mandatory standards. Stakeholders had previously identified the low quality and lack of regulation of PMDs as being contributing factors to fires.

2.13 The Committee heard that PMDs have seen a surge in safety incidents and fires, partly due to poor battery quality and charging systems. [42] We heard that there have been numerous cases of fires caused by inferior quality batteries in PMDs.[43]

2.14 Particular concerns were raised about poorly manufactured PMDs being imported from overseas and sold online.[44]

2.15 Inquiry participants suggested that New South Wales should adopt regulations that address battery quality and charging systems.[45]

2.16 In August 2024 the NSW Government announced that PMDs, such as e-bikes and e-scooters, will be required to comply with mandatory safety standards in order

[42] Submission 9, ACCC, pp 2-3; Submission 17, Insurance Council, pp 1-2; Ms Sutcliffe, EV FireSafe, Transcript, p 2; Mr Dominic Dodwell, Board Member, Owners Corporation Network (OCN), Transcript of evidence, 26 March 2024, pp 14-15; Professor Vinayak Dixit, Professor of Transport Engineering, University of New South Wales (UNSW), Transcript of evidence, 26 March 2024, p 27; Ms Kylie Macfarlane, Chief Operating Officer, (Insurance Council) of Australia, Transcript of evidence, 26 March 2024, pp 49-50.

[43] Submission 7, EVC, p 8; Submission 9, ACCC, pp 2-3; Submission 11, MTA NSW, p 10; Submission 14, Allianz, p 5; Submission 17, Insurance Council, pp 1-2; Submission 19, NSW Government, pp 5-6; Submission 31, Zipidi, p 1.

[44] Submission 23, Bicycle NSW, p 2; Ms Macfarlane, Insurance Council, Transcript, pp 49-50.

[45] Submission 7, EVC, p 8; Submission 17, Insurance Council, p 3; Submission 23, Bicycle NSW, p 2.

for them to be sold in New South Wales.[46] A sample of each product will be required to be tested by an accredited laboratory. Enforcement of these new requirements will begin in February 2025.[47]

2.17 The Committee welcomes the Government's work to strengthen the regulation of PMDs and recommends that the new standards are supported by an active inspection regime to ensure compliance.

2.18 This approach is supported by the Electric Vehicle Council and Owners Corporation Network, which called for increased resources for NSW Fair Trading so that it can effectively enforce the new regulations.[48]

2.19 Compliance should also extend to e-commerce platforms where New South Wales consumers can buy PMDs. NSW Fair Trading told us it can work with online traders to remove products from platforms where they are unsafe.[49] The Committee submits that NSW Fair Trading should work with e-commerce platforms to restrict PMDs from sale that do not comply with New South Wales standards.

National regulatory gaps for PMDs

2.20 While regulations have been strengthened in New South Wales, regulatory gaps remain in other Australian jurisdictions, as well as with imports, which are regulated by the Federal Government.

2.21 There is no single mandatory safety standard for PMDs containing lithium-ion batteries in Australia.[50]

2.22 There is also inadequate quality control for imported PMDs. The Australian Border Force (ABF) explained that it is responsible for enforcing import prohibitions, however, its remit does not extend to quality control of PMDs. The ABF does not initiate import prohibitions without a direction from an agency such as the Federal Department of Infrastructure, Regional Development, Communications and the Arts.[51]

2.23 NSW Fair Trading told us that they were participating in a national electricity taskforce that was looking at improving and harmonising electrical safety regulation across Australia.[52]

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[46] Minister for Better Regulation and Fair Trading, *National leading standards for battery powered devices*, media release, NSW Government, 8 August 2024, viewed 8 August 2024.

[47] NSW Fair Trading, *New safety standards for lithium-ion batteries in e-mobility devices*, webpage, NSW Government, viewed 28 August 2024.

[48] Submission 7, EVC, p 8; Submission 16, OCN, p 8; Mr Ross De Rango, Head of Energy and Infrastructure, Electric Vehicle Council (EVC), Transcript of evidence, 30 April 2024, p 4.

[49] Mr John Tansey PSM, Executive Director, Policy & Delivery, NSW Fair Trading, Transcript of evidence, 30 April 2024, p 21.

[50] Submission 19, NSW Government, p 5.

[51] Mr Tony Smith, Assistant Commissioner, Customs, Australian Border Force (ABF), Transcript of evidence, 30 April 2024, pp 26-27.

[52] Mr Tansey, NSW Fair Trading, Transcript, p 20.

2.24 The Committee recommends that NSW Fair Trading advocate for the adoption of NSW's new PMD standards across Australian jurisdictions. To address the issue of low-quality imports, the NSW Government should also advocate to the Federal Government for quality control for imported PMDs to be strengthened.

New building regulations relating to EVs may be needed

Summary

- Stakeholders differed on whether current regulations for new buildings were sufficient to mitigate the risk of EV fires.
- Existing buildings are less likely to be designed with management of EV risks in mind. Additional regulation may therefore be required when EV chargers are retrofitted.

Recommendation 4

That Building Commission NSW work with the Australian Building Codes Board to review building codes to ensure that EV fire risks are mitigated in new and existing buildings.

2.25 The Committee heard mixed evidence on whether EVs posed a significant risk to buildings, and whether new building codes were required to address emerging risks.

2.26 The Australian Building Codes Board told us that the standards for new buildings related to EVs were sufficient, with appropriate requirements for sprinklers, fire-resistant protection between car parks and storeys above, fire alarms and evacuation routes.[53]

2.27 On the other hand, fire agencies considered that the regulations for existing buildings were insufficient for addressing EV battery fire risks. AFAC told us that current design requirements for buildings and road infrastructure did not include any specific considerations of EV battery risks.[54]

2.28 AFAC and Fire and Rescue NSW suggested that underground EV parking should be classified as a 'special hazard', with builders required to consider specific fire protection measures such as:

- smoke detection
- automatic ventilation
- automatic notification to the fire service
- automatic shutdown of EV charging facilities
- adequate structural stability and compartmentation
- availability of firefighting water on site

[53] Mr Rake, ABCB, Transcript, p 13.

[54] Submission 15, AFAC, p 8.

- automatic fire sprinkler systems
- CCTV, including thermal imaging where EVs are parked
- facilities to capture contaminated water runoff.[55]

2.29 The Electric Vehicles Council disagreed, submitting that EVs do not pose a higher risk to buildings, and that additional requirements proposed by fire agencies were not supported by evidence or regulatory impact testing.[56]

2.30 NSW Government acknowledged that implementing Fire and Rescue NSW's recommended fire protection measures in existing buildings is more challenging than in new buildings.[57] Also, the Australian Building Codes Board told us that their remit does not extend to existing buildings.[58]

2.31 However, the City of Sydney submitted that the National Construction Code (NCC) could be updated to include measures for existing developments when EV chargers are retrofitted.[59]

2.32 Given this mixed evidence, the Committee submits that the building regulator in New South Wales, Building Commission NSW, work with the Australian Building Codes Board to review current building codes to ensure that both new buildings and existing buildings with retrofitted EV chargers are designed with sufficient mitigation measures in place for EV fires.

[55] Submission 15, AFAC, pp 11-12; Submission 19, NSW Government, p 16.

[56] Submission 7, EVC, p 6.

[57] Submission 19, NSW Government, p 16.

[58] Mr Rake, ABCB, Transcript, p 13.

[59] Submission 13, City of Sydney, p 6.

Chapter Three – Emergency services workers and emergency responses

EV fires pose risks to emergency services workers

Summary

- Emergency services workers face physical risks from EV battery fires, including injury from fires and illness from exposure to chemicals and toxic gases.
- Long-term effects from exposure to EV battery fire gases and chemicals are still unclear, requiring further research and data.

Recommendation 5

That NSW Health work with Fire and Rescue NSW and SafeWork NSW to collect data on injuries and health impacts caused by electric and hybrid vehicle battery fires, to support research and policy development.

3.1 The Committee heard that emergency services personnel are potentially at risk from EV fires and the toxic gases they emit.

3.2 EV Firesafe provided the following global examples of injuries and fatalities experienced by emergency services workers as a result of lithium-ion battery technology:

- two firefighters were killed by a vapour cloud explosion from a battery energy storage system. Seven firefighters were seriously injured in a similar event.
- At least six tow truck drivers have been hospitalised following secondary ignition of EV battery fires.[60]

3.3 Emergency services agencies told us that they were aware of potential health effects from chemical exposure as a result of EV fires. Fire and Rescue NSW told us that they were currently researching the impact of exposure to toxic chemicals found in the smoke produced by EV battery fires.[61]

3.4 The NSW State Emergency Service (NSW SES) advised that short-term health risks from exposure to chemicals produced by EV battery fires included:

- respiratory issues caused by inhalation of smoke and fumes, leading to coughing, shortness of breath and throat irritation
- skin and eye irritation from contact with fumes or smoke

[60] Submission 8, EV FireSafe, p 17.

[61] Commissioner Fewtrell, Fire and Rescue NSW, Transcript, p 11.

- nausea, dizziness and headaches, from exposure to toxic gases such as carbon monoxide and hydrogen fluoride
- allergic reactions to certain chemicals, resulting in symptoms like skin rashes, swelling and itching.[62]

3.5 The NSW SES also told us that the potential long-term health risks from exposure to chemicals from EV battery fires may include:

- increased risk of developing respiratory conditions such as asthma, chronic bronchitis and lung cancer
- potential neurological effects from the accumulation in the body of chemicals with neurotoxic properties released during battery fires, such as heavy metals like lead and cadmium
- increased risk of cardiovascular disease from exposure to air pollutants from battery fires, including fine particulate matter and volatile organic compounds
- increased risk of developing cancer from certain chemicals released during battery fires, such as benzene and formaldehyde, which are known carcinogens.[63]

3.6 The NSW SES told us that there is limited research associated with the long-term health effects from exposure to chemicals produced by electric and hybrid vehicle battery fires. The main reason for this is because it has only been a short time since the introduction of EVs.[64]

3.7 Similarly, the Committee heard that there is a lack of data on injuries caused by EV battery fires. NSW Ambulance told us that current national clinical coding (classification) guidelines do not allow injuries caused by EV batteries to be separated from similar injuries with different causes.[65]

3.8 Given the currently limited research and data on these emerging risks, improved data collection and further research into the health impacts of electric and hybrid vehicle fires to emergency services and other workers is needed. This will be essential to developing best-practice and data driven clinical guidelines, and better management of health and other risks.

[62] Answers to supplementary questions (SQ), NSW SES, 2 May 2024, p 1.

[63] Answers to SQ, NSW SES, pp 1-2.

[64] Answers to SQ, NSW SES, p 1.

[65] Answers to questions taken on notice (QON), NSW Ambulance, 23 May 2024, p 1.

Emergency services workers should be trained to safely manage EV fires

Summary

- Emergency services workers currently have knowledge gaps in dealing with the hazards and risks of EV battery fires and other EV battery incidents. Targeted and coordinated training can address this.
- Currently, there is work being done to develop and implement training for emergency services workers on EV battery fire risks and safely responding to EV battery incidents
- However, not all New South Wales emergency services workers have undertaken this training.

Recommendation 6

That the NSW Government ensure that all emergency services workers and first responders are provided with targeted, consistent and coordinated training on the safe management of electric and hybrid vehicle battery fires, and that the training is actively promoted to the emergency services sector state-wide.

Knowledge gaps requiring training

3.9 The Committee heard that, currently, emergency services workers have knowledge gaps in dealing with the hazards and risks of EV battery fires. EV FireSafe, for example, submitted that awareness among emergency services workers about the risks of EV fires is very low.[66]

3.10 AFAC suggested that there was a low level of awareness in the emergency services sector about the particular risks of thermal runaway in EV batteries and how to safely handle damaged EVs and EV batteries.[67]

3.11 Given these knowledge gaps, the Committee submits that targeted and coordinated training on EV battery risks and the safe handling of EV batteries is needed, and that the training should be actively promoted to the emergency services sector. This view was supported by emergency services and other stakeholders that we heard from during the course of the inquiry.

3.12 AFAC stated that there was a need for further practical training for firefighters in responding to incidents involving EVs.[68]

3.13 NSW Ambulance told us that paramedics require training to recognise EV incidents and understand the unique safety and other issues associated with EV incidents.[69]

[66] Submission 8, EV FireSafe, p 17.

[67] Submission 15, AFAC, p 10.

[68] Submission 15, AFAC, p 11.

[69] Assistant Commissioner Peter Elliott, A/Executive Director, Finance and Corporate Services, (NSW Ambulance) & NSW Ministry of Health, Transcript of evidence, 30 April 2024, p 14.

3.14 VRA Rescue NSW told us that multi-agency training was needed, because, for example, in regional areas a first response to an EV battery fire or other EV incident may come from one of a number of agencies.[70]

Current progress on training emergency services workers in New South Wales

3.15 The Committee heard that there were efforts by New South Wales emergency services to develop and provide training to emergency services workers on EV battery fire risks and safely responding to EV battery incidents, but that not all emergency services workers had received this training.

3.16 Fire and Rescue NSW told us that they had developed a training package with TAFE NSW, which is accessible to all emergency services workers.[71] The NSW Government submitted that the TAFE training covered EV hazards and risks, and guidelines to work safely around EVs.[72]

3.17 The NSW Government indicated that Transport for NSW had provided its first responders, including Transport Commanders, Traffic Emergency Patrollers and Tow Truck operators, with the TAFE training to assist them in safely managing the risks relating to EV incidents.[73]

3.18 While this course is available to all emergency services workers in New South Wales, the Committee heard that not all emergency services personnel had completed it.

3.19 For example, the NSW SES told us that while it had taken up the TAFE training, offering it to its General Land Rescue Operators, as of March 2024 none of its staff had completed it.[74]

3.20 VRA Rescue NSW told us that the TAFE course needed to be rolled out and promoted to regional and rural New South Wales, and that it be used to train teams from multiple emergency services agencies.[75]

3.21 NSW Rural Fire Service (NSW RFS) told us that they had updated their training programs to incorporate the safe handling of EV incidents. They also told us that their operational doctrine, processes and protocols had been similarly updated.[76]

3.22 Some emergency services agencies did not identify EV battery-specific training for their workers as being a particular priority, emphasising instead the importance of training in dealing with general hazards and risks. For example, NSW Ambulance and NSW Ministry of Health told us that they provided training

[70] Commissioner Brenton Charlton, Commissioner, VRA Rescue NSW, Transcript of evidence, 30 April 2024, p 11.

[71] Commissioner Fewtrell, Fire and Rescue NSW, Transcript, p 8.

[72] Submission 19, NSW Government, p 3.

[73] Submission 19, NSW Government, p 14; Mr Craig Moran, Executive Director, Customer Journey Management, Operations, Office of the Coordinator-General, Transport for NSW (TfNSW), Transcript of evidence, 26 March 2024, pp 43-44, 46; Answers to QON, Transport for NSW, 16 April 2024, p 2.

[74] Chief Superintendent Kenneth Murphy AFSM, Senior Manager Capability, NSW State Emergency Service (NSW SES), Transcript of evidence, 26 March 2024, p 35.

[75] Commissioner Charlton, VRA Rescue NSW, Transcript, p 11.

[76] Superintendent Dan Meijer, Supervisor Operational Improvement, NSW Rural Fire Service (NSW RFS), Transcript of evidence, 30 April 2024, p 13.

and education for frontline emergency services staff covering a range of scenarios.[77]

3.23 Some stakeholders suggested that existing training for emergency services workers was not sufficient. EV FireSafe submitted that, due to the evolving nature of EV technologies and the lack of in-depth technical knowledge, no independent or standardised training adequately addressed the specific risks of EV fires to emergency services workers and first responders.[78]

3.24 VRA Rescue NSW told us that there was a cost in upskilling, and that additional funding was needed to provide training for emergency services workers in regional and rural New South Wales.[79]

Emergency services workers should have adequate personal protective equipment and cleaning facilities

Summary

- While emergency services workers are provided with personal protective equipment (PPE), more research is needed into the most effective PPE for EV battery fire and other hazards.
- Not all emergency services workers have access to industrial cleaning facilities that can decontaminate PPE from EV battery chemicals.

Recommendation 7

That the NSW Government research the impact of EV battery fires on personal protective equipment (PPE) and ensure that the PPE used by emergency services workers effectively protects them from EV battery fires and other hazards.

Recommendation 8

That the NSW Government provide emergency services workers with access to industrial cleaning facilities for decontaminating personal protective equipment and personal protective clothing.

Researching best-practice approaches for PPE

3.25 The Committee heard that personal protective equipment (PPE) currently being used by emergency services workers may not effectively protect them from EV battery fires and other hazards.

3.26 The NSW Government told us that firefighters rely heavily on the firefighting uniform and breathing apparatus to minimise health and safety risks.[80] However,

[77] Assistant Commissioner Elliott, NSW Ambulance, Transcript, p 8.

[78] Submission 8, EV FireSafe, p 19; Mr Fish, EV FireSafe, Transcript, p 9; Mr Stuart Charity, Chief Executive Officer, Australian Automotive Aftermarket Association (AAAA), Transcript of evidence, 26 March 2024, p 22.

[79] Commissioner Charlton, VRA Rescue NSW, Transcript, p 11.

[80] Submission 19, NSW Government, pp 15-16.

they told us that more work is needed to evaluate how effective current firefighting PPE is against lithium-ion battery fires and thermal runaway.[81]

3.27 The NSW SES told us that they are currently looking at whether their current PPE requirements are fit-for-purpose for dealing with EV battery fires, and whether or not the standard PPE needs to be upgraded.[82]

3.28 Fire and Rescue NSW told us that while their PPE meets international standards, it is unclear how well it protects against EV battery fires.[83]

3.29 There is anecdotal evidence to suggest that EV battery fires can cause significant damage to PPE. Fire and Rescue NSW shared an experience of dealing with a fire involving lithium polymer batteries, in which all the attending firefighters' boots needed to be replaced due to the damage caused by the battery fire. This highlights the need for research into the durability and effectiveness of PPE.[84]

3.30 The Australian Manufacturing Workers' Union recommended that a code of practice for PPE be developed to establish a minimum standard of protection for emergency services workers. They told us that this would help ensure that PPE is fit-for-purpose in protecting emergency services workers from all real-life hazardous environments, including those created by EV battery fires.[85]

3.31 Transport for NSW told us that they provided their staff with specific PPE, such as gloves, to protect them from electric shocks from EV batteries.[86]

Cleaning of PPE

3.32 The Committee heard there are issues with decontaminating PPE after exposure to toxic chemicals from EV fires, and that industrial cleaning facilities are not widely available.

3.33 Currently, Fire and Rescue NSW is the only agency in New South Wales equipped with centralised uniform washing and decontamination systems for most PPE used by firefighters.[87] This leaves many emergency services workers at risk of prolonged exposure to hazardous chemicals due to inadequate cleaning.[88]

3.34 Emergency services workers who take contaminated gear home for cleaning face additional health risks. VRA Rescue NSW told us about their concerns about lack of access to industrial cleaning facilities:

> From our perspective, it's an unfortunate circumstance where some locations will have industrial cleaners and dryers, others will not. Others will take it home,

[81] Submission 19, NSW Government, pp 15-16.

[82] Chief Superintendent Murphy, NSW SES, Transcript, p 35.

[83] Commissioner Fewtrell, Fire and Rescue NSW, Transcript, p 12.

[84] Commissioner Fewtrell, Fire and Rescue NSW, Transcript, p 12.

[85] Mr Charity, AAAA, Transcript, p 22; Mr Bradley Pidgeon, Acting State Secretary, Australian Manufacturing Workers' Union (AMWU), Transcript of evidence, 26 March 2024, p 24.

[86] Mr Moran, TfNSW, Transcript, p 44.

[87] Submission 30, Encap, p 18.

[88] Submission 30, Encap, p 18.

unfortunately and do it within the confines of the domestic house, which is probably not ideal.[89]

3.35 VRA Rescue NSW told us that they would like to have in place industrial cleaning arrangements for workers to prevent contaminants from entering domestic households.[90]

3.36 The NSW RFS told us that they have implemented an asbestos decontamination program for emergency services workers across New South Wales, which could be a model for other contaminants.[91]

There should be standardised guidelines for responding to EV battery fires

Summary

- Multiple emergency services agencies may respond to EV battery fires and other EV battery incidents.
- Currently, individual emergency services agencies are developing their own operational guidelines for responding to EV incidents.
- It would be beneficial if there were standardised guidelines in place that were used by all emergency services agencies.

Recommendation 9

That Fire and Rescue NSW, NSW Rural Fire Service, VRA Rescue NSW, NSW State Emergency Service and NSW Ambulance collaborate to develop and implement standardised emergency response guidelines for responding to EV battery fires and other EV battery incidents.

3.37 EV battery incidents could be responded to by several different emergency services. AFAC told us that EV incident responses may involve police, volunteer rescue agencies, fire agencies and tow truck operators.[92]

3.38 EV FireSafe told us that there are no standardised operational procedures in place for road rescue activities involving EVs.[93]

3.39 The NSW SES told us that it was a challenge to keep up with emerging EV technology, that this created additional challenges for emergency services workers in terms of their policy and procedures. They identified a need across the broader emergency services sector for research, additional training to understand the challenges that exist for the NSW SES and other emergency services.[94]

[89] Commissioner Charlton, VRA Rescue NSW, Transcript, p 12.
[90] Commissioner Charlton, VRA Rescue NSW, Transcript, p 12.
[91] Superintendent Meijer, NSW RFS, Transcript, p 12.
[92] Submission 15, AFAC, p 11.
[93] Submission 8, EV FireSafe, pp 15, 17.
[94] Chief Superintendent Murphy, NSW SES, Transcript, p 35.

3.40 AFAC recommended that evidence-based procedures and guidelines be developed and implemented to assist them in understanding specific EV battery risk factors and enabling them to deal with EV incidents more effectively.[95]

Current development of emergency response guidelines

3.41 The Committee heard that multiple government agencies and industry organisations are in the process of developing operational guidelines or procedures for responding to EV battery fires.[96]

3.42 The NSW Government told us that the NSW RFS has had an operational protocol for incidents involving EVs in place since 2001.[97]

3.43 The NSW Government also told the Committee that Fire and Rescue NSW was leading a collaborative research program into the Safety of Alternative and Renewable Energy Technologies (SARET), the outputs of which will inform the development of evidence-based procedures, equipment, and training to assist emergency services workers to respond to high consequence incidents involving EVs. [98]

3.44 AFAC told us that they had developed guidelines for incidents involving EVs and worked regularly with fire agencies to address the knowledge gaps among emergency responders and industry stakeholders.[99] The NSW SES similarly advised that they are working on an operating procedure for responding to EV incidents.[100]

3.45 The Committee acknowledges the work that is being done by individual emergency services agencies to develop operational guidelines for responding to EV battery fires and other EV battery incidents. However, the Committee is of the view that guidelines for this purpose will be more effective, better understood and widely adhered to if NSW Government agencies collaborate on developing and implementing standardised guidelines that reflect current best-practice.

[95] Submission 15, AFAC, p 8.

[96] Submission 19, NSW Government, pp 3, 16.

[97] Submission 19, NSW Government, p 3.

[98] Submission 19, NSW Government, pp 2-3.

[99] Submission 15, AFAC, pp 11-12.

[100] Chief Superintendent Murphy, NSW SES, Transcript, p 39.

Chapter Four – Automotive workers

Automotive workers face risks from handling EV batteries

Summary

- Automotive repair workers face physical risks, such as electric hazards and exposure to chemicals, as a result of handling EV batteries.

Finding 4

Automotive workers face risks, such as electrical hazards and exposure to chemicals, as a result of handling EV batteries.

4.1 The Committee heard that automotive repair workers face risks as a result of handling EV batteries. Workers may face risks such as electrical hazards and chemical exposure.

4.2 The NSW Government submitted that automotive workers that deal with EVs are at risk of receiving electric shocks if they come into contact with components of the electrical system. Even when working on other parts of the vehicle, there may be a risk of shock to a worker if the isolation between the electrical system and the vehicle chassis has been compromised.[101]

4.3 The Motor Traders' Association of NSW told us that that this risk is higher with EV batteries as they can have a voltage range that is far higher than the standard voltage in most vehicles.[102]

4.4 Workers can also be injured by contact with battery electrolyte[103], which is a fluid in lithium-ion batteries.[104] Contact could happen with the skin or eyes, or through the ingestion or inhalation of vapours. The health risks of battery electrolyte contact are particularly acute when dealing with damaged vehicles or when dismantling vehicles.[105]

4.5 Powerful magnets contained within EVs can also affect workers who are wearing pacemakers or other medical devices. The NSW Government advised that workers fitted with these sorts of medical devices should not perform work on EVs.[106]

[101] Submission 19, NSW Government, p 12.

[102] Submission 11, MTA NSW, p 9.

[103] Submission 19, NSW Government, p 12.

[104] Australian Competition and Consumer Commission, *Lithium-ion batteries and consumer product safety*, Report, Commonwealth of Australia, October 2023, p 79.

[105] Submission 19, NSW Government, p 12.

[106] Submission 19, NSW Government, p 12.

Current work on developing EV-specific qualifications

Summary

- Stakeholders told the Committee that there was a need for qualifications and training programs for workers that repair and service EVs.
- Currently, the NSW Government is considering specialised qualifications and training for this purpose.

Finding 5

The NSW Government is considering specialised qualifications and training for workers that repair and service EVs.

There is a need for specialised training in EV technology for automotive workers

4.6 The Committee heard that automative workers that repair and service EVs should have access to specialised trade qualifications and training programs that cover EV technology and the safe handling of EVs.

4.7 Fire agencies told us that many automotive industry workers do not have an adequate understanding of the hazards and risks related to EV batteries.[107] AFAC told us that safety training should be extended to include awareness of fire and explosion risks, identifying warning signs of damaged batteries, safe handling and storage, and dealing with thermal runaway.[108]

4.8 EV FireSafe told us that current automotive trade training does not fully cover the hazards related to lithium-ion batteries.[109]

4.9 The Australian Manufacturing Workers' Union told us that their membership, which includes automotive technicians, has indicated that they do not have access to adequate training in relation to EVs.[110]

4.10 The Australian Automotive Aftermarket Association identified a low level of EV competency among automative workers as being an issue. They also told us that while there are numerous registered automotive training organisations across the country, many do not offer EV training.[111]

4.11 The Motor Traders' Association NSW recommended that automotive workers should be given access to EV safety training.[112]

4.12 On the other hand, some stakeholders considered that existing training and qualification systems were sufficient. The Electric Vehicles Council, for example,

[107] Submission 15, AFAC, pp 9-10; Submission 19, NSW Government, p 11.
[108] Submission 15, AFAC, pp 9-10.
[109] Submission 8, EV FireSafe, p 19.
[110] Mr Pidgeon, AMWU, Transcript, p 22.
[111] Mr Charity, AAAA, Transcript, p 23.
[112] Submission 11, MTA NSW, p 11.

submitted that the existing regulatory arrangements for EV maintenance and repair was 'likely adequate.'[113]

The NSW Government is considering specialised EV qualifications and training

4.13 The *Motor Dealers and Repairers Act 2013* requires that motor vehicle repair work can only be carried out by a person holding a tradesperson certificate for all the relevant classes of repair work they perform. This requires the completion of a qualification prescribed in the *Motor Dealers and Repairers Regulation 2014*.[114] However, there is currently no specific licence class or mandatory training for workers undertaking repair work on EVs.[115]

4.14 The NSW Government submitted that it was considering appropriate qualifications for tradespeople to perform work on EVs.[116] Consultations on potential EV qualifications were conducted in May and June 2024, during the course of this inquiry.[117]

4.15 The NSW Government's proposal includes prescribing separate courses for light EV motor mechanics and heavy EV motor mechanics. The stated aim of the proposal is to ensure that EVs are repaired by skilled and qualified tradespersons, which will safeguard worker and consumer safety.[118]

4.16 The Committee considers that these training requirements, if implemented, will ensure that automotive workers that service and repair EVs have appropriate skills and experience to do the work, and that they know how to handle EVs safely. The Committee is confident that this initiative will address need for EV qualifications and training identified by inquiry participants and we encourage the NSW Government to progress its work in this area.

[113] Submission 7, EVC, p 4; Mr Ian Price, General Manager – Registered Training Organisation, Motor Traders' Association NSW (MTA NSW), Transcript of evidence, 30 April 2024, p 3.

[114] NSW Fair Trading, *Proposed changes to repair classes and qualifications: Remake of the Motor Vehicle Dealers and Repairers Regulation 2014*, Consultation paper, NSW Government, May 2024, p 1, viewed 26 August 2024.

[115] Submission 19, NSW Government, p 14.

[116] Submission 19, NSW Government, p 14.

[117] NSW Government, Review of motor trades qualification and certification, 'Have your say', webpage, viewed 26 August 2024.

[118] Proposed changes to repair classes and qualifications, p 5, viewed 26 August 2024.

Chapter Five – Public awareness and consumer education

Public awareness and consumer education on EV battery risks

Summary

- Consumers should have evidence-based information on how to safely purchase, use, charge and dispose of EV and PMD batteries. This will help reduce fire and other safety risks of EVs and PMDs.
- Existing education and awareness campaigns from NSW Government agencies should continue and be co-ordinated across the whole of government.

Recommendation 10

That the NSW Government run a co-ordinated safety and education campaign on lithium-ion battery risks, including clear and accessible guidance on purchase, usage, storage and disposal of batteries.

Need for public awareness and consumer education

5.1 Consumer and user awareness of EV battery risks can help reduce instances of EV-related fires and other safety issues.

5.2 Professor Vinayak Dixit, Professor of Transport Engineering at the University of New South Wales told the Committee there was a need for education and awareness-building around people's understanding of EV battery risks and how to manage those risks.[119]

5.3 The Insurance Council of Australia told us that consumers were buying products like PMDs without being made aware of the risks associated with them, such as potential safety issues with chargers. They told us there is a need to educate consumers on the risks and how they can ensure that PMDs are functioning properly and safely.[120]

5.4 EV FireSafe told us that driver and user awareness can be an effective tool for mitigating risks of EV battery fires and reducing risks to life and property when battery fires occur.[121]

5.5 The Australian Border Force submitted that PMD importers should targeted by safety and education efforts so that they understand the risks associated with obtaining and selling cheap, low-quality e-bikes and e-scooters.[122]

[119] Professor Dixit, UNSW, Transcript, p 27.

[120] Ms Macfarlane, Insurance Council, Transcript, p 50.

[121] Submission 8, EV FireSafe, p 15.

[122] Mr Smith, ABF, Transcript, p 30.

5.6 The ACCC recommended in its October 2023 report on lithium-ion batteries and consumer product safety that "…consumers should have clear and accessible education resources on Li-ion battery safety".[123]

5.7 Allianz Australia supported the idea of a public awareness campaign, telling us that the NSW Government should develop and promote safety information for EV owners, for example, advising them of the dangers of moving an EV that has been involved in a collision or submersion into an enclosed space.[124]

5.8 The Australian Building Codes Board told us that there was a role for all organisations in helping consumers understand how to use PMDs safely. They compared this to other campaigns in the fire safety space, such as campaigns reminding people to change smoke alarm batteries and encouraging people not to dry washing in front of portable heaters or open fireplaces.[125]

5.9 The Owners Corporation Network told us that they supported education on the safety risks of PMDs. They told us about their own efforts to educate strata managers about PMD risks in apartment buildings, including conducting online seminars on the subject and publishing a model by-law that could be incorporated into strata schemes. The model by-law contains minimum standards that PMDs need to comply with, and how they should be charged in apartment buildings to ensure safety. The Owners Corporation Network told us that the model by-law was supported by an education program.[126]

Current NSW Government education and awareness campaigns

5.10 The Committee heard that NSW Government agencies were currently working to educate consumers on the issue of EV safety.

5.11 For example, the NSW Environment Protection Authority told us that they had partnered with Fire and Rescue NSW to develop education resources on how to safely and properly dispose of EV batteries .[127]

5.12 Similarly, in July 2024, NSW Fair Trading commenced a consumer education campaign explaining how lithium-ion battery powered products should be used and highlighting unsafe charging practices and other factors that may cause fires.[128]

5.13 The Committee acknowledges the work currently being done by government agencies to educate consumers. The NSW Government should ensure that these education campaigns are co-ordinated so that consumers have consistent, clear

[123] Submission 9, ACCC, p 2.

[124] Submission 14, Allianz, p 4.

[125] Mr Rake, ABCB, Transcript, pp 13-14.

[126] Mr Fred Tuckwell, Chair of the Board, Owners Corporation Network (OCN), Transcript of evidence, 26 March 2024, pp 12-15.

[127] Mr Tony Chappel, Chief Executive Officer, NSW Environment Protection Authority (NSW EPA), Transcript of evidence, 30 April 2024, pp 23, 25.

[128] Minister for Better Regulation and Fair Trading, Minister for Customer Service and Digital Government, *Product standards for e-bikes and e-scooters proposed to stop fires, protect properties and save lives*, media release, NSW Government, 14 July 2024, viewed 30 August 2024.

and accessible information on the purchase, use, charging and disposal of EVs and PMDs.

Appendix One – Terms of reference

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.

Appendix Two – Conduct of inquiry

Terms of reference

On 21 September 2023 the Committee resolved to conduct an inquiry into electric and hybrid vehicle batteries. The full terms of reference are at Appendix One.

Calls for submission

The Committee called for submissions and wrote to key stakeholders inviting them to make a submission. A media release was issued and information about the inquiry posted on the Legislative Assembly's social media accounts.

Deadline for submissions was 24 November 2023, and was extended to 2 February 2024. The Committee received 33 submissions from a range of stakeholders including: automotive industry associations, fire safety and emergency responders, electric and hybrid vehicle battery experts, and NSW Government departments. A list of submissions is at Appendix Three and copies of the submissions are available on the Committee's webpage.

Site visit

At its meeting on 5 December 2023, the Committee resolved to contact Hyundai Motor Company Australia for a site visit at its showroom in Macquarie Park on 11 March 2024. The purpose of the site visit was to give members a better understanding of the structure of electric and hybrid cars compared to petrol cars, the impact of crashes on electric and hybrid car engines, and how to contain electric and hybrid battery fires.

Public hearings

Two hearings were conducted at Parliament House. A full day hearing was held on Tuesday 26 March, and a half day hearing on Tuesday 30 April 2024.

Witnesses appeared in person and via videoconference, and the hearings were broadcast live on the Parliament's website.

Witnesses who provided evidence at the hearings are listed in Appendix Four.

Transcripts of the public hearings, together with submissions, answers to supplementary questions and questions on notice, and additional information, are available on the inquiry's webpage.

Appendix Three – Submissions

No.	Author
1	Confidential
2	Mr Paul Cavalier
3	Mr William Isley
4	Australasian New Car Assessment Program (ANCAP) Safety
5	Owners Corporation SP50705 Domain Apartments
6	Confidential
7	Electric Vehicle Council
8	EV FireSafe
9	Australian Competition & Consumer Commission
10	National Motorists Association Australia
11	Motor Traders' Association NSW
12	Australasian College of Road Safety
13	City of Sydney
14	Allianz Australia
15	Australasian Fire and Emergency Service Authorities Council
16	Owners Corporation Network
17	Insurance Council of Australia
18	Federal Chamber of Automotive Industries
19	NSW Government
20	Association for the Battery Recycling Industry
21	Australian Automotive Aftermarket Association
22	Australian Automotive Dealer Association
23	Bicycle NSW

No.	Author
24	Confidential
25	Mr Paul Bourke
26	Mr Darryl Drake
27	Lithium Batteries Australia & LifeTech Energy
28	Confidential
29	Bicycle Industries Australia
30	Encap Fire & Safety Pty Ltd
30a	Confidential
31	Zipidi
31a	Zipidi
32	University of New South Wales
33	NSW Environment Protection Authority (EPA)

Appendix Four – Witnesses

26 March 2024
Parliament House, Macquarie Room, Sydney, NSW

Witness	Position and Organisation
Ms Carla Hoorweg	Chief Executive Officer Australasian New Car Assessment Program (ANCAP Safety)
Ms Emma Sutcliffe	Director EV FireSafe
Mr Dan Fish	Technical Director EV FireSafe
Mr Fred Tuckwell	Chair of the Board Owners Corporation Network
Mr Dominic Dodwell	Board Member Owners Corporation Network
Mr Gary Rake	Chief Executive Officer & Head of Division Australian Building Codes Board
Mr Armin Pauza	General Manager and Principal Electrical Engineer Lithium Batteries Australia & LifeTech Energy
Ms Katharine Hole	Chief Executive Officer Association for the Battery Recycling Industry
Mr Stuart Charity	Chief Executive Officer Australian Automotive Aftermarket Association
Mr David Russell	Senior Policy Manager Australian Automotive Dealer Association
Mr Bradley Pidgeon	Acting State Secretary Australian Manufacturing Workers' Union
Professor Vinayak Dixit	Professor of Transport Engineering University of New South Wales
Mr Peter McLean	Chief Executive Officer Bicycle NSW
Mr Peter Bourke	General Manager Bicycle Industries Australia

Miss Samantha Brandon	Corporate Counsel Zoomo Pty Ltd
Mr Oliver deGeest	General Counsel Zoomo Pty Ltd
Chief Superintendent Kenneth Murphy AFSM	Senior Manager Capability NSW State Emergency Service
Mr John Hardwick	Executive Director Asset Management and Acting Head of Transport Safety, Safety Environment and Regulation Division Transport for NSW
Mr Craig Moran	Executive Director, Customer Journey Management, Operations (Office of the Coordinator-General) Transport for NSW
Mr James Kelly	Acting Executive Director Operations and Enforcement SafeWork NSW
Ms Elizabeth Waller	Acting General Manager Health Safety Environment Transurban
Ms Kylie Macfarlane	Chief Operating Officer Insurance Council of Australia
Ms Alix Pearce	Senior Manager, Climate & Social Policy Insurance Council of Australia

30 April 2024
Parliament House, Jubilee Room, Sydney, NSW

Witness	Position and Organisation
Mr Collin Jennings	Head of Government Relations & Advocacy Motor Traders' Association NSW
Mr Ian Price	General Manager – Registered Training Organisation Motor Traders' Association NSW
Mr Ross De Rango	Head of Energy and Infrastructure Electric Vehicle Council
Commissioner Jeremy Fewtrell AFSM	Commissioner Fire and Rescue NSW Australasian Fire and Emergency Service Authorities Council & Fire and Rescue NSW

Superintendent Dan Meijer	Supervisor Operational Improvement NSW Rural Fire Service
Commissioner Brenton Charlton	Commissioner, VRA Rescue NSW VRA Rescue NSW
Assistant Commissioner Peter Elliott	A/Executive Director, Finance and Corporate Services NSW Ambulance & NSW Ministry of Health
Mr Jason Darney	Executive Director, Education and Skills – North TAFE NSW
Mr John Tansey PSM	Executive Director, Policy & Delivery NSW Fair Trading
Mr Tony Chappel	Chief Executive Officer NSW Environment Protection Authority (EPA)
Mr Tony Smith	Assistant Commissioner, Customs Australian Border Force

Appendix Five – Extracts from minutes

MINUTES OF MEETING 2
10:02 am, 15 September 2023
Room 814 and videoconference

Members present
Mr Warren (Chair), Mr Kirby (Deputy Chair), Mr Atalla, Mr Butler, Mr Cross, Mr D'Adam, Mr Latham, Ms Wilkinson

Apologies
Mrs Ward

Officers present
Rohan Tyler, Imogen Wurf, Abegail Turingan, Isabella Ciampa

1. ***
2. **Confirmation of minutes**
   Resolved, on the motion of Mr Atalla, seconded Mr Cross: That the minutes of the meeting of 2 August 2023 be confirmed.
3. ***
4. **Consideration of topics for first inquiry**
   The Committee considered topics for a first inquiry of the 58th Parliament.

   Discussion ensued.

   Resolved, on the motion of Mr Cross, seconded Mr Latham: That the Committee agree-in-principle to conduct an inquiry into electric and hybrid vehicle batteries, with Committee staff to draft terms of reference for consideration at the next committee meeting.
5. **General business**
   ***
6. **Next Meeting**
   The meeting adjourned at 1:11 pm until 21 September 2023.

MINUTES OF MEETING 3
9:33 am, 21 September 2023
Room 1254 and videoconference

Members present
Mr Warren (Chair), Mr Kirby (Deputy Chair), Mr Atalla, Mr Butler, Mr Cross, Mr Latham, Mrs Ward, Ms Wilkinson

Apologies
Mr D'Adam

Officers present
Rohan Tyler, Imogen Wurf, Abegail Turingan, Isabella Ciampa

1. **Confirmation of minutes**
   Resolved, on the motion of Mr Latham, seconded Mr Kirby: That the minutes of the meeting of 15 September 2023 be confirmed.

2. **Proposed inquiry into electric and hybrid vehicle batteries**
   The Committee considered adopting an inquiry into electric and hybrid vehicle batteries.

   Discussion ensued.

   Resolved, on the motion of Mr Atalla, seconded by Mr Latham:

   - That the Committee conduct an inquiry into electric and hybrid vehicles, in accordance with the draft terms of reference, as amended.
   - That Committee staff circulate a list of stakeholders to members, and that members have three business days after receiving the draft stakeholder list to provide further input.
   - That the Committee call for submissions and advertise the inquiry on the Committee's webpage.
   - That the closing date for submissions be 24 November 2023.
   - That key stakeholders identified by the Committee be informed of the inquiry and invited to make a submission.
   - That the Chair issue a media release and promotional video announcing the inquiry.

   The Committee discussed seeking a briefing and demonstration of electric and hybrid vehicles and requested that Committee staff make arrangements for this at a date and time to be determined.

3. ***

4. **General business**
   ***

5. **Next meeting**
   The meeting adjourned at 9:52 am until a time and date to be determined.

MINUTES OF MEETING 4
2:00 pm, 5 December 2023
Room 1254 and videoconference

Members present
Mr Warren (Chair) (Webex), Mr Kirby (Deputy Chair) (Webex)**,** Mr Atalla (Webex), Mr Butler, Mr Cross, Mr D'Adam (Webex), Ms Wilkinson (Webex)

Apologies
Mr Latham and Mrs Ward

Officers present
Rohan Tyler, Shanshan Guo, Mengyuan Chen, Alice Zwar and Isabella Ciampa

1. Confirmation of minutes

Resolved, on the motion of Mr Butler, seconded by Mr Atalla: That the minutes of the meeting of 21 September 2023 be confirmed.

2. Inquiry into electric and hybrid vehicle batteries

2.1 Submission extension requests

The Committee noted that the following stakeholders had requested an extension to the deadline for making a submission to the inquiry:

- Sid Rallapalli of Nextport requested an extension to 1 December 2023.
- David Russell of the Australian Automotive Dealer Association requested an extension to 1 December 2023.
- Leigh Hills of United Firefighters Union of Australia requested an extension to 8 December 2023.

2.2 Submission deadline extension

Resolved, on the motion of Mr Cross, seconded by Mr Butler: That the Committee authorise extending the submission deadline to 2 February 2024.

2.3 Publication of submissions

Resolved, on the motion of Mr D'Adam, seconded by Ms Wilkinson:

- That submissions Nos 1 and 6 remain confidential to the Committee and not be published.
- That the Committee authorise the publication of submissions Nos 2 to 4 and 7 to 21 in full, with standard redactions as set out in the publication table.

The Committee requested that Committee staff clarify the confidentiality status of submission No. 5 and provide an update in the next Committee meeting.

2.4 Site visit

Resolved, on the motion of Mr Butler, seconded by Mr Cross: That the Committee conduct a site visit to the Hyundai showroom on 9 February 2024, and that the Chair and Committee staff be authorised to make the administrative arrangements for the site visit.

2.5 Media article on the inquiry topic

Mr Kirby undertook to provide a media article about the inquiry topic to Committee staff for circulation to the Committee.

3. Next meeting

The meeting adjourned at 2:19 pm until a time and date to be determined.

MINUTES OF MEETING 5
9:46 am, 21 March 2024
Room 1254

Members present
Mr Warren (Chair), Mr Kirby (Deputy Chair), Mr Atalla, Mr Butler, Mr Cross and Mr D'Adam

Apologies
Mr Latham, Ms Ward and Ms Wilkinson

Officers present
Rohan Tyler, Shanshan Guo, Mengyuan Chen and Abegail Turingan

1. Confirmation of minutes

Resolved, on the motion of Mr Butler: That the minutes of the meeting of 5 December 2023 be confirmed.

2. ***

3. Inquiry into electric and hybrid vehicle batteries

3.1 Publication of submissions

Resolved, on the motion of Mr D'Adam, seconded by Mr Butler:

- That submissions 24, 28 and 30a remain confidential to the Committee and not be published.
- That the Committee authorise publication of submissions 5, 22, 23, 25 to 27, 29 and 30 in full, with standard redactions as set out in the publication table.

3.2 Site visit to the Hyundai showroom, Macquarie Park

Resolved, on the motion of Mr Cross, seconded by Mr D'Adam: That the Committee authorise the Chair to send a thank-you letter to Hyundai on behalf of the Committee.

3.3 Site visit to Nexport

Resolved, on the motion of Mr Kirby, seconded by Mr D'Adam: That the Committee conduct a site visit to Nexport at a time and date to be confirmed, and that the Chair and Committee staff be authorised to make the administrative arrangements for the site visit.

3.4 Public hearing

Resolved, on the motion of Mr Cross, seconded by Mr Butler: That the Committee:

- conduct a public hearing on 26 March 2024 for the inquiry into electric and hybrid vehicle batteries
- invite witnesses listed at Attachment H to attend the public hearing on 26 March 2024 to give evidence to the inquiry into electric and hybrid vehicle batteries
- authorise the Chair and Committee staff to make the administrative arrangements for the public hearing.

3.5 Media article

The Committee noted a media article, titled 'EV battery types explained: Lithium-ion vs LFP pros & cons', dated 3 December 2023, provided by Mr Kirby.

4. ***

5. General business

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6. Next meeting

The meeting adjourned at 9:54 am until a time and date to be determined.

MINUTES OF MEETING 6

9:04 am, 26 March 2024

Macquarie Room and videoconference

Members present

Mr Warren (Chair), Mr Kirby (Deputy Chair) (via videoconference)**,** Mr Atalla (via videoconference), Mr Butler, Mr Cross, Mr Latham, Mrs Ward and Ms Wilkinson

Apologies

Mr D'Adam

Officers present

Leon Last, Rohan Tyler, Shanshan Guo, Mengyuan Chen, Abegail Turingan and Dhriti Bhattacherjee

1. Confirmation of minutes

Resolved, on the motion of Mr Butler, seconded by Mr Cross: That the minutes of the meeting of 21 March 2024 be confirmed.

2. Inquiry into electric and hybrid vehicle batteries

Pre-hearing deliberative meeting

2.1 Procedural resolutions

Resolved, on the motion of Mr Butler, seconded by Mr Latham

- That the Committee invite the witnesses listed in the notice of the public hearing for Tuesday, 26 March 2024 to give evidence in relation to the inquiry into electric and hybrid vehicle batteries.
- That the Committee authorise the audio-visual recording, photography and broadcasting of the public hearing on 26 March 2024, in accordance with the guidelines for the coverage of proceedings for committees administered by the NSW Legislative Assembly.
- That:
    - Members email any proposed supplementary questions for witnesses to the secretariat by 4:00 pm, Thursday 28 March 2024; and
    - The secretariat to then circulate all proposed supplementary questions to the Committee, with members to lodge any objections to the questions by 4:00 pm, Tuesday 2 April 2024.
- That witnesses be requested to return answers to questions taken on notice and any supplementary questions within 14 days of the date on which the questions are forwarded to them.

The deliberative meeting adjourned at 9:09 am.

Public hearing

The Chair opened the public hearing at 9:15 am. Witnesses attended the public hearing in person and via videoconference. Members of the public were admitted. The Chair made a short opening statement.

The following witnesses were admitted:

- Ms Carla Hoorweg, Chief Executive Officer, Australasian New Car Assessment Program (ANCAP) Safety, affirmed and examined by videoconference.
- Ms Emma Sutcliffe, Director, EV FireSafe, affirmed and examined.
- Mr Dan Fish, Technical Director, EV FireSafe, affirmed and examined.

Evidence concluded and the witnesses withdrew.

The following witnesses were admitted:

- Mr Fred Tuckwell, Chair of the Board, Owners Corporation Network, affirmed and examined by videoconference.
- Mr Dominic Dodwell, Board Member, Owners Corporation Network, affirmed and examined by videoconference.

- Mr Gary Rake, Chief Executive Officer & Head of Division, Australian Building Codes Board, affirmed and examined by videoconference.

Evidence concluded and the witnesses withdrew.

The following witnesses were admitted:

- Mr Armin Pauza, General Manager & Principal Electrical Engineer, Lithium Batteries Australia & LiFeTech Energy, sworn and examined.
- Ms Katharine Hole, Chief Executive Officer, Association for the Battery Recycling Industry, sworn and examined.

Evidence concluded and the witnesses withdrew.

The following witnesses were admitted:

- Mr Stuart Charity, Chief Executive Officer, Australian Automotive Aftermarket Association, affirmed and examined.
- Mr David Russell, Senior Policy Manager, Australian Automotive Dealer Association, affirmed and examined by videoconference.
- Mr Bradley Pidgeon, Acting State Secretary, Australian Manufacturing Workers' Union, sworn and examined.

Evidence concluded and the witnesses withdrew.

The hearing adjourned at 11:47 am and resumed at 12:35 pm.

The following witness was admitted:

- Professor Vinayak Dixit, Director Transnational Ventures, University Office of Global Affairs, University of New South Wales, sworn and examined.

Evidence concluded and the witness withdrew.

The following witnesses were admitted:

- Mr Peter McLean, Chief Executive Officer, Bicycle NSW, sworn and examined.
- Mr Peter Bourke, General Manager, Bicycle Industries Australia, sworn and examined.
- Miss Samantha Brandon, Corporate Counsel, Zoomo Pty Ltd, affirmed and examined by videoconference.
- Mr Oliver deGeest, General Counsel, Zoomo Pty Ltd, affirmed and examined by videoconference.

Evidence concluded and the witnesses withdrew.

The hearing adjourned at 1:24 pm and resumed at 2:30 pm.

The following witness was admitted:

- Chief Superintendent Kenneth Murphy AFSM, Senior Manager Capability, NSW State Emergency Service, sworn and examined.

Evidence concluded and the witness withdrew.

The following witnesses were admitted:

- Mr John Hardwick, Executive Director Asset Management and Acting Head of Transport Safety, Safety Environment and Regulation Division, Transport for NSW, sworn and examined.
- Mr Craig Moran, Executive Director, Customer Journey Management, Operations (Office of the Coordinator-General), Transport for NSW, affirmed and examined.
- Mr James Kelly, Acting Executive Director Operations and Enforcement, SafeWork NSW, Department of Customer Service, affirmed and examined.
- Ms Elizabeth Waller, Acting General Manager, Health Safety Environment, Transurban, affirmed and examined by videoconference.

Evidence concluded and the witnesses withdrew.

The following witnesses were admitted:

- Ms Kylie Macfarlane, Chief Operating Officer, Insurance Council of Australia, affirmed and examined.
- Ms Alix Pearce, Senior Manager, Climate & Social Policy, Insurance Council of Australia, sworn and examined.

Ms Macfarlane tendered a document.

Evidence concluded and the witnesses withdrew.

The public hearing concluded at 4:26 pm.

Post-hearing deliberative meeting

The Chair opened the deliberative meeting at 4:31 pm.

2.2 Procedural resolutions

Resolved, on the motion of Ms Ward, seconded by Ms Wilkinson:

- That the corrected transcript of evidence be authorised for publication and uploaded to the Committee's webpage.
- That the Committee accept and publish the document tendered by the Insurance Council of Australia.

2.3 Additional public hearing

Resolved, on the motion of Ms Ward on behalf of Mr Latham, seconded by Mr Butler:

- That the Committee conduct an additional public hearing on 30 April 2024 for the inquiry into electric and hybrid vehicle batteries.
- That the Committee authorise the Chair and Committee staff to make the administrative arrangements for the additional public hearing.

3. Next meeting

The meeting adjourned at 4:38 pm until 30 April 2024.

MINUTES OF MEETING 7

9:22 am, 30 April 2024
Jubilee Room and videoconference

Members present

Mr Kirby (Deputy Chair), Mr Atalla (via videoconference), Mr Butler, Mr Cross, Mr D'Adam (via videoconference), Mr Latham (via videoconference), Mrs Ward and Ms Wilkinson (via videoconference)

Apologies

Mr Warren (Chair)

Officers present

Stephanie Mulvey, Shanshan Guo, Mengyuan Chen, Abegail Turingan and Dhriti Bhattacherjee

1. Confirmation of minutes

Resolved, on the motion of Mr Butler, seconded by Mr Cross: That the minutes of the meeting of 26 March 2024 be confirmed.

2. Correspondence

Committee noted the correspondence received from:

- Dr Amanda Cohn MLC on 20 March 2024.
- The Hon. Jeremy Buckingham MLC on 21 March 2024.

The Committee agreed to defer further consideration of the correspondence to its next meeting.

3. Inquiry into electric and hybrid vehicle batteries

Pre-hearing deliberative meeting

3.1 Publication of submissions

Committee considered submissions 31 to 32 for publication.

Resolved, on the motion of Mr Cross, seconded by Mr Butler: That submissions 31 and 32 be published, with standard redactions.

3.2 Publication of answers to questions taken on notice and supplementary questions

Committee considered answers to questions taken on notice and supplementary questions for publication.

Resolved, on the motion of Mr Butler, seconded by Mrs Ward: That the Committee authorise publication of:

- answers to questions taken on notice in full, with standard redactions from the following witnesses:
  - Transport for NSW.
  - Insurance Council of Australia.
- answers to supplementary questions in full, with standard redactions from the following witness:
  - Association for the Battery Recycling Industry

3.3 Procedural resolutions

Resolved, on the motion of Mrs Ward, seconded by Mr Butler: That the Committee invite the witnesses listed in the notice of the public hearing for Tuesday 30 April 2024 to give evidence in relation to the inquiry into electric and hybrid vehicle batteries.

Resolved, on the motion of Mr Cross, seconded by Mr Butler: That the Committee authorise the audio-visual recording, photography and broadcasting of the public hearing on 30 April 2024, in accordance with the guidelines for the coverage of proceedings for committees administered by the NSW Legislative Assembly.

Resolved, on the motion of Mrs Ward, seconded by Mr Butler: That:

- The Committee adopt the following process to supplementary questions:
  - Members email any proposed supplementary questions for witnesses to the secretariat by 4:00 pm, Thursday 2 May 2024; and
  - The secretariat to then circulate all proposed supplementary questions to the Committee, with members to lodge any objections to the questions by 4:00 pm, Tuesday 7 May 2024.
- Witnesses be requested to return answers to questions taken on notice and any supplementary questions within 14 days of the date on which the questions are forwarded to them.

The deliberative meeting adjourned at 9:27 am.

Public hearing

The Deputy Chair opened the public hearing at 9:30 am. Witnesses attended the public hearing in person and via videoconference. Members of the public were admitted. The Deputy Chair made a short opening statement.

The following witnesses were admitted:

- Mr Ian Price, General Manager – Registered Training Organisation, Motor Traders' Association of NSW, sworn and examined.
- Mr Collin Jennings, Head of Government Relations and Advocacy, Motor Traders' Association of NSW, affirmed and examined.

- Mr Ross De Rango, Head of Energy and Infrastructure, Electric Vehicle Council, sworn and examined by videoconference.

Evidence concluded and the witnesses withdrew.

The following witnesses were admitted:

- Commissioner Jeremy Fewtrell AFSM, Commissioner, Fire and Rescue NSW, Australasian Fire and Emergency Services Authorities Council and Fire and Rescue NSW, sworn and examined.
- Superintendent Dan Meijer, Supervisor Operational Improvement, NSW Rural Fire Service, affirmed and examined.
- Commissioner Brenton Charlton, Supervisor, Operational Improvement, VRA Rescue NSW, sworn and examined.
- Assistant Commissioner Peter Elliott, A/Executive Director, Finance and Corporate Services, NSW Ambulance and NSW Ministry of Health, sworn and examined.

Evidence concluded and the witnesses withdrew.

The following witness was admitted:

- Mr Jason Darney, Executive Director, Education and Skills - North, TAFE NSW, affirmed and examined by videoconference.

Evidence concluded and the witness withdrew.

The hearing adjourned at 11:22 am and resumed at 11:48 am.

The following witness was admitted:

- Mr John Tansey PSM, Executive Director, Policy & Delivery, NSW Fair Trading, affirmed and examined.

Evidence concluded and the witness withdrew.

The following witness was admitted:

- Mr Tony Chappel, Chief Executive Officer, NSW Environment Protection Authority, sworn and examined.

Evidence concluded and the witness withdrew.

The following witness was admitted:

- Mr Tony Smith, Assistant Commissioner, Customs, Australian Border Force, affirmed and examined by videoconference.

Evidence concluded and the witness withdrew.

The public hearing concluded at 1:06 pm.

Post-hearing deliberative meeting

The Deputy Chair opened the deliberative meeting at 1:07 pm.

3.4 Procedural resolutions

Resolved, on the motion of Mrs Ward, seconded by Mr Butler: That the corrected transcript of evidence be authorised for publication and uploaded to the Committee's webpage.

Resolved, on the motion of Mr Cross, seconded by Mr Butler:

- That submission from the Environment Protection Authority be published in full, with standard redactions.
- That the Committee authorise publication of answers to questions taken on notice from Transurban and NSW State Emergency Service at the public hearing on 26 March 2024 in full, with standard redactions.

4. Future Work Plan

***

Resolved, on the motion of Mr Cross and, seconded by Mr Butler: That the Committee authorise Committee staff to follow up with witnesses who appeared at the public hearing on 26 March 2024 and who have not provided answers to questions taken on notice and / or supplementary questions.

5. Next meeting

The meeting adjourned at 1:12 pm until a time and date to be determined.

UNCONFIRMED MINUTES OF MEETING 9
2:34 pm, 13 September 2024
Room 1254 and videoconference

Members present

Mr Warren (Chair) (via Webex), Mr Kirby (Deputy Chair) (via Webex), Mr Cross, Mr D'Adam (via Webex), Mrs Ward (via Webex) and Ms Wilkinson (via Webex).

Apologies

Mr Atalla, Mr Butler and Mr Latham

Officers present

Rohan Tyler, Jerson Balaton, Mengyuan Chen, Abegail Turingan and Nicolle Gill

1. Resolution permitting recording of meeting

Resolved, on the motion of Ms Wilkinson, seconded by Mr Kirby: That the Committee agrees to record the meeting for the purposes of committee staff preparing the minutes and report amendments, and that the recording be deleted when the report is tabled.

2. Confirmation of minutes

Resolved, on the motion of Mr Kirby, seconded by Mr Cross: That the minutes of the meeting of 26 August 2024 be confirmed.

3. ***

4. Inquiry into electric and hybrid vehicle batteries

4.1 Publication of answers to questions taken on notice and supplementary questions

Organisation / Individual	Author's requested publication status	Publication recommendation
Answers to questions taken on notice		
EV Firesafe	Not specified	Public
Transurban	Not specified	Public
Zoomo Pty Ltd	Not specified	Public
Australian Border Force	Not specified	Public
Fire and Rescue NSW	Not specified	Public
NSW Ambulance and NSW Ministry of Health	Not specified	Public
NSW Environment Protection Authority	Not specified	Public
NSW Fair Trading	Not specified	Public
TAFE NSW	Not specified	Public
Answers to supplementary questions		
EV Firesafe	Not specified	Public
NSW State Emergency Services	Not specified	Public
Owners Corporations Network	Not specified	Public
University of New South Wales	Not specified	Public
Electric Vehicle Council	Not specified	Public
Fire and Rescue NSW	Not specified	Public
NSW Ambulance and NSW Ministry of Health	Not specified	Public
VRA Rescue NSW	Not specified	Public

Resolved, on the motion of Ms Ward, seconded by Ms Wilkinson: That the Committee authorise publication of answers to questions taken on notice at the public hearings on 26 March 2024 and 30 April 2024 and answers to supplementary questions listed above in full, with standard redactions.

4.2 Report cover

Resolved, on the motion of Mr Cross, seconded by Mr Kirby: That the proposed report cover circulated to the Committee on 6 September 2024 be the cover of the Committee's tabled report.

4.3 Consideration of the Chair's draft report

Resolved, on the motion of Mr D'Adam, seconded by Ms Wilkinson: That the Committee consider Chair's draft report *in globo*.

Resolved, on the motion of Mr D'Adam, seconded by Mr Kirby:

- That the Chair's draft report be the report of the Committee and that it be signed by the Chair and presented to the House.
- That the Chair and Committee staff be permitted to correct stylistic, typographical and grammatical errors.
- That, once tabled, the report be published on the Committee's webpage.

The Chair thanked Committee members for their contribution to the inquiry and Committee staff for their support.

5. ***

6. Next meeting

The meeting adjourned at 2:49 pm until a time and date to be determined.