

A Burning Issue:

Navigating the battery crisis in Australia's recycling sector

Issues Paper
*Prepared by the
Australian Council of Recycling*

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Acknowledgement of Country

We acknowledge that Aboriginal and Torres Strait Islander peoples are the First Peoples and Traditional Custodians of Australia, and the oldest continuing culture in human history.

We pay respect to Elders past and present and commit to respecting the lands we walk on, and the communities we walk with. We celebrate the deep and enduring connection of Aboriginal and Torres Strait Islander peoples to Country and acknowledge their continuing custodianship of the land, seas and sky.

We acknowledge the ongoing stewardship of Aboriginal and Torres Strait Islander peoples, and the important contribution they make to our communities, economies and the environment.

About ACOR

The Australian Council of Recycling (ACOR) is the peak industry body for the resource recovery, recycling, and remanufacturing sector in Australia. The Australian recycling industry contributes almost \$19 billion in economic value, while delivering environmental benefits such as resource efficiency and diversion of material from landfill. One job is supported for every 430 tonnes of material recycled in Australia.

Our membership is represented across the recycling value chain, and includes leading organisations in advanced chemical recycling processes, CDS operations, kerbside recycling, recovered metal, glass, plastics, paper, textiles and e-product reprocessing and remanufacturing, road recycling and construction and demolition recovery. Our mission is to lead the transition to a circular economy through the recycling supply chain.

About Recycle Mate

Recycle Mate is an initiative of the Australian Council of Recycling, with funding support from the Australian Government's *Environment Restoration Fund* program, and currently supported by the Queensland Government. Adaptation Environmental Support is the program delivery partner.

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Introduction

Batteries—in loose or embedded form—are an increasingly alarming hazard in both kerbside and commercial waste and recycling streams. The Australian Council of Recycling (ACOR) and the recycling and resource recovery sector are overwhelmingly concerned about increasing incidents involving batteries causing property damage, serious injury and death—and resulting in skyrocketing insurance fees and financial assurance requirements.

The rapid digitisation of everyday items, the increasing number of ‘smart’ and ‘disposable’ items such as vapes, containing embedded and sealed batteries, and a lack of safe disposal options and poor consumer education, have all contributed to the steep rise in batteries in inappropriate waste streams. This is causing fires and property damage and severely compromising the collection and resource recovery operations for recyclers all across Australia.

Fires caused by batteries are now widespread across mixed recycling facilities (MRFs), in waste and recycling trucks, and in depots—in short, at every point across collection, disposal and recovery streams. These fires pose great dangers to human health and life and are also damaging to the environment through smoke and polluted runoff. The economic impact of these incidents is being borne by the community through rising rates, by councils through truck fires and future risk, and by industry in the loss of critical infrastructure.

In the year ending 30 June 2023, there were over one thousand battery-related fire incidents reported in the waste and recycling sectors nationwide, amounting to over three a day.¹ It is unlikely that this figure even begins to reveal the true extent of the battery crisis for recyclers. A lack of accurate data and information on e-waste fires can be traced to under-reporting—as colossal insurance premiums disincentivise operators to report—along with the fragmented regulatory landscape, with eight environmental regulators, eight fire and rescue organisations and almost 550 local councils nationwide.

While the damage caused by batteries is critical, current volumes are only the beginning. The generation of lithium-ion battery waste is projected to grow exponentially over the next 20 years. The Australian Government has identified that lithium-ion, sodium-ion, vanadium flow batteries and others will support the transition to a net zero emissions economy. Batteries are now part of our energy arsenal and everyday lives—and so is their waste. According to a 2016 report commissioned by the Australian Government's then-Department of the Environment, lithium-ion battery waste alone is projected to increase exponentially from 3,340 tonnes in 2016 to 137,618 tonnes in 2036.²

While issues relating to battery safety reach broadly across society, pointing to an urgent need for battery quality standards, the principal focus of the recycling sector is to address the risks at end of use.

There are critical actions that governments must take to address safe battery disposal, including:

- Ensure comprehensive safe collection
- A community education campaign
- E-stewardship reform including a deposit scheme
- Regulatory harmonisation and enforcement

This discussion paper explores the overarching considerations in this space, and seeks to identify solutions to this current environmental crisis. We acknowledge the work already commenced by the State and Territory Governments, the Australian Government, CSIRO, Australian Competition & Consumer Commission (ACCC), and peak bodies including the National Waste and Recycling Industry Council (NWRIC) and the Waste Management and Resource Recovery Association of Australia (WMRR).

¹ NWRIC letter to federal ministers, 31 July 2023, ‘Industry call for immediate and urgent action—dangers of incorrectly disposed batteries’.

² ‘Waste lithium-ion battery projections’, Randell Environmental Consulting, 19 July 2016.

Overarching considerations

Rapid digitisation and single-use electronics

The rapid digitisation of everyday items has led to the increased use of batteries in products across the world, including Australia. As more devices become ‘smart’ or connected to the internet, they often require power sources to function, and batteries are a common choice due to their portability and efficiency gains.

The proliferation of smartphones, smartwatches, fitness trackers, wireless headphones, and other portable gadgets is contributing to the rising demand for batteries. Additionally, the Internet of Things (IoT) has led to the integration of connectivity and sensors into various household items, from thermostats to kitchen appliances, necessitating power sources, including batteries.

Many consumer goods that enter recycling streams, particularly ‘disposable’ items such as vapes, contain embedded and sealed batteries that are unable to be safely removed. In many cases, the item is not labelled with advice that it contains a battery, let alone the type. Furthermore, appropriate disposal options are often not accessible or available. Recyclers are now finding these batteries in increasingly obscure items, which makes fire risk harder and harder to address, exposing the industry to increasing danger to people, equipment and property.

A major Australian MRF operator has identified that there is one vape per two tonnes of material received—potentially extrapolating to hundreds of thousands of vapes across all waste streams. Vapes are one of the many new products that are being introduced into the market with no producer regard or responsibility for the safe disposal of their component parts when their useful life comes to an end.

In October 2023, Clean Up Australia and WMRR called for producer responsibility for vape disposal. Due to the battery being embedded, vapes are not included in the nationwide Battery Stewardship Scheme, meaning they cannot be dropped off at battery collection points, like supermarkets and retailers. Clean Up Australia’s Pip Kiernan points out that *“at the moment, there is no standardised or consistent way to collect and safely dispose and recover vapes in Australia”* and notes that the onus of figuring out how to safely dispose of them is placed on the consumer, when really it should be the responsibility of the producers.³

The use of personal electronic vehicles, including electric bicycles (e-bikes), electric scooters (e-scooters), and even one-wheeled or two-wheeled electric vehicles, has also been steadily increasing in Australia, reflecting a global trend toward sustainable and innovative transportation options. Simultaneously, the demand for electric vehicles (EVs) is rising sharply. By June 2023, 8.4% of all new cars sold were EVs, a more than 120% increase on all of 2022.⁴

The International Energy Agency (IEA) reports that annual global battery production for EVs could increase from 160GWh to 6,600GWh in 2030.⁵

This increased use of batteries has wide-ranging implications for recyclers, waste management and environmental concerns related to disposal and recycling. Efforts to manage battery waste responsibly and develop more sustainable battery technologies are becoming increasingly important as digitisation continues to advance.

³ https://www.wmrr.asn.au/Web/Web/Media/Media_Release/2023/Producer%20Responsibility%20Needed%20for%20Vape%20Disposal.aspx

⁴ https://electricvehiclecouncil.com.au/wp-content/uploads/2023/07/State-of-EVs_July-2023_.pdf

⁵ International Energy Agency, 2021, Net Zero by 2050: A roadmap for the global energy sector

Lack of comprehensive access to safe disposal locations

Currently, there is no comprehensive network of e-waste collection points in the community. We are already witnessing the effects of inadequate or irregular access to safe disposal locations, and with no readily available avenues for consumers to safely (and legally) dispose of their end-of-life batteries, improper storage and disposal has become dangerously common. Unsafe disposal is leading to littering, fires and other critical incidents and poses risks to human health through exposure to harmful chemicals. Our sector is seeing this scenario play out across Australia at an alarming rate; however, the full extent of these incidents is unknown.

There are two fundamental gaps that must be addressed in order to provide Australians with a comprehensive network of safe disposal locations.

Firstly, there is no comprehensive catalogue of items that contain batteries, which pose a hazard in conventional waste and recycling streams: essentially anything that is a battery or has a battery or is powered by a battery to produce any movement, noise, light or process. A comprehensive catalogue of these items must be developed to support a sufficiently robust form of categorisation and inform the delivery of a full coverage safe disposal network.

Such items include:

- E-cigarettes/vapes
- Vehicle batteries, car and boat
- Household batteries
- Emergency locator beacons
- Smoke detectors
- Household appliances with rechargeable batteries
- Products with removable batteries
- Products with integrated batteries: flashing toys, disposable torches, Christmas decorations, kids shoes, musical greeting cards

Secondly, there is a critical lack of access to safe disposal locations for these items, with no comprehensive geographic mapping of the gaps. Where there are no accessible safe disposal avenues, the only options for the community are to stockpile, litter or dispose into incorrect waste streams.

The CSIRO report prepared for the ACCC titled 'Lithium-ion Battery safety' acknowledges that, 'At present, there are no readily available methods and sources of information that the public can adopt to allow them to safely manage a damaged battery and places for appropriate disposal/recycling.'⁶

A complete gap analysis of disposal options must be undertaken for all item categories, to inform where and how safe collection points must be provided. Urgent action must then be taken to ensure that all collection point gaps are filled, maintaining adherence to appropriate guidelines and ensuring there is always an easily accessible option for the community to safely dispose of any problem item.

By establishing safe disposal points, we can create a structured, reliable system that encourages responsible recycling practices, protects the environment, and promotes resource recovery.

Consumer and sector safety

Battery fires are now a real and present threat across MRFs, in waste and recycling trucks, and in depots—in short, at every point across collection, disposal and recovery streams. But they are also becoming an increasing threat to businesses, consumers and public property, with incorrect disposal or storage in households or businesses and unmonitored collection points at public libraries all at risk.

In one e-waste recycling facility, for example, a recent fire was caused by a lithium-ion battery in an electric toothbrush. Items containing embedded batteries are not conventional e-waste and can't be safely dismantled or recycled, yet at this facility half of all deliveries to this facility contain an item with an embedded battery, and one in five contain multiple embedded or loose batteries.

⁶ https://www.accc.gov.au/system/files/Lithium-ion%20Batteries%20report_3_0.pdf

It is important to remember that batteries such as these are classified as dangerous goods under the Australian Dangerous Goods Code. Lithium batteries, in particular, are deemed ‘Class 9—Miscellaneous dangerous substances and articles, including environmentally hazardous substances’.

NSW Fire and Rescue research found that in the first six months of 2023 there were 114 lithium battery-related fires in NSW alone, with key items of concern being power packs and chargers, micro-mobility devices like e-bikes and e-scooters and portable power banks.⁷

“Firefighters are responding to an average of more than three battery fires a week from in-home charging issues or incorrect disposal.

“As we bring more batteries into our homes, it is important that we dispose of them correctly once they’ve reached the end of their life.”

*Trent Curtain, Acting Deputy Commissioner –
Field Operations, Fire and Rescue NSW*

An Australian-wide audit conducted by ACOR’s Recycle Mate Program found all Australian councils have already banned batteries from kerbside bins. Despite being dangerous substances and banned from kerbside bins, batteries keep ending up there, and no enforcement is applied to keep them out of waste and recycling streams.

In its ‘Lithium-ion Batteries Report’, the ACCC has recommended that, ‘Commonwealth, state, and territory governments should improve, expand and standardise data collection practices around the hazards posed by consumer electrical products, including Li-ion batteries.’ The recommendation went on to place critical importance on not just the collection of this data in a timely manner, but also, wherever practicable and to the extent permitted by law, the incident data being regularly shared among stakeholders to facilitate a better understanding of emerging risks and hazards.

This knowledge-sharing is essential to keep consumer and sector safe, and would inform whether the standards and regulations for the minimum requirements for safe collection, storage, and transport to recycling depots are being met. Understanding what collection points exist where, and what safety and hazardous waste protocols are in place is essential to public safety. Without this, it is incredibly difficult to enforce the jurisdictional standards and regulations to manage these issues.

Regulatory inconsistency and confusion

Currently, there are significant gaps between product stewardship schemes that cover batteries and e-products. This goes on to create geographic black holes where no collection points exist for certain—or in some cases any—types of batteries. This leads to increasingly confused consumers seeing no convenient safe disposal option and therefore disposing incorrectly, often in their kerbside bins.

In January 2022, the ACCC authorised a product stewardship scheme for loose batteries called B-cycle, run by the Battery Stewardship Council. The B-cycle scheme accepts all small loose and easily removable batteries, including regular AA and other sizes, button batteries, rechargeable batteries, and small removable batteries from devices like hearing aids, power tools, e-bikes and digital cameras. But it does not accept any embedded batteries at all, nor mobile phone or laptop batteries, lead acid batteries, remote-controlled car batteries, Dyson batteries, exit lighting, nor any batteries produced by brands not in the scope of the scheme.

B-cycle’s latest Positive Charge 2022-2023 Report estimates that only 12% of handheld batteries were collected for recycling in Australia. That means 88% of our batteries are ending up in landfills, MRFs or otherwise disposed of incorrectly.⁸

Regulatory confusion exists across every jurisdiction in Australia. The end-of-life management for e-product and battery products in Australia is structured around an array of product stewardship schemes, with many items falling through the gaps. While mobile phone batteries are accepted by Mobile Muster, laptop batteries must go to an NTCRS-affiliated recycler. While an NTCRS-affiliated recycler is paid to recycle a laptop, the battery recycler that subsequently receives the removed embedded battery receives no recycling fee from

⁷ <https://www.nsw.gov.au/media-releases/battery-safety-to-prevent-fires>

⁸ <https://bcycle.com.au/wp-content/uploads/2023/12/B-cycle-Positive-Charge-Report-20231207.pdf>

the NTCRS to recycle the laptop's battery. E-products recyclers themselves find determining which batteries are in and out of scope of the various schemes to be near impossible to navigate.

With their rapid rise in popularity, vapes are an emblematic case study for the practical and policy difficulties around how to dispose of 'smart' 'disposable' or 'single-use' products with integrated batteries. Clean Up Australia Chair Pip Kiernan stated that for years cigarette butts were the most littered item across the country, but vape litter is emerging as a new and serious environmental issue.

*There is an urgent, overdue need for a safe system for the disposal of vapes devices, refills and e-liquids. There is currently no federal or state legislation governing end-of-life disposal for vapes. They are simultaneously classified as e-waste because of their electronic components, and as hazardous waste due to the liquid nicotine residue, making recycling difficult.*⁹

The recent rise of electric vehicles (EVs) is also an increasing concern as these first-generation vehicles' batteries approach their end of life. A CSIRO report found that 'most markets have no EV-battery-specific requirements or delineations of responsibility between the producer and the consumer ... the lack of regulation creates uncertainties for Original Equipment Manufacturers (OEMs), second-life-battery companies, recyclers and potential customers. The lack of regulation also gives rise to challenges to battery recycling for end-of-life (EOL) lithium-ion batteries and leads to low collection rates, environmental pollution due to poor disposal practices and hazards to the public.'¹⁰

Beyond OEM and consumer confusion, there are also flow-on economic impacts of regulatory confusion. The National Retail Association stated in its submission to CSIRO that 'inconsistent regulatory approaches are causing trade barriers between jurisdictions, unnecessary costs, commercial risks, and market confusion, ultimately impacting rates of non-compliance'.¹¹

Regulations play a pivotal role in shaping the infrastructure, processes, and awareness necessary for proper battery disposal and recycling practices across the country. Currently, regulatory inconsistencies and confusion are impeding safe disposal options, the effectiveness of product steward schemes, and creating safety risks at all points of the disposal logistics chain with increasing economic impacts for recyclers and the resource sector. The cost of unsafe battery disposal is being borne by the community through rising rates, by councils through truck fires and future risk, by industry in the loss of critical infrastructure and in damage to the environment through smoke and polluted runoff from damaging fires, and above all through the dangers to human health and life.

⁹ https://www.wmrr.asn.au/Web/Web/Media/Media_Release/2023/Producer%20Responsibility%20Needed%20for%20Vape%20Disposal.aspx

¹⁰ https://www.accc.gov.au/system/files/Lithium-ion%20Batteries%20report_3_0.pdf

¹¹ National Retailer Association, Submission to the ACCC Lithium-ion Batteries Issues Paper, p 7.

ACOR recommendations

1. Ensure comprehensive collection

Any education campaign to raise necessary awareness around battery and e-waste disposal will be ineffective without ensuring that there is a comprehensive network of collection points. Our sector is already aware that some jurisdictions across Australia don't have convenient access to safe disposal options for batteries so a gap analysis is necessary to support the creation of safe disposal infrastructure.

ACOR has built a national recycling data hub, Recycle Mate, where councils and recycling organisations are able to update their recycling information in real-time, as new collection points, and recycling capabilities get introduced. The Recycle Mate data hub is a first-of-its-kind initiative, created with funding support from the Australian Government's *Environment Restoration Fund* program, and currently supported by the Queensland Government.

The Recycle Mate data hub has been developed as a free resource for every local government, recycling program and charitable organisation across Australia to more easily share information about their recycling programs, disposal locations and product stewardship schemes, and contribute better recycling information for all. The data contributed through the hub by local councils, the recycling and resource management sector, and private businesses, helps deliver accurate recycling and waste disposal information through the app to the community, specific to their local area.

Recycle Mate has already catalogued recycling information for all Australian local councils, 10 major product stewardship schemes, CDS schemes and over 2,000 community recycling centres, transfer stations and landfills. Critically, Recycle Mate has the capability to assess and add safe disposal information on new products that hit the market, providing this information via the Recycle Mate app directly to councils and consumers' phones.

Recycle Mate has already identified, through a detailed breakdown of electronic product categories, many regions where there are no recovery paths for certain items, such as types of batteries and electronic waste that are unsafe for kerbside disposal and subject to landfill bans. There also do not appear to be any legitimate disposal options for vapes, apart from pilot programs run by Envirostream, and many councils are hesitating to launch their own trials for fear they will assume the cost of managing neighbouring councils' vape waste.

A solution to addressing this data gap would be an initiative by all State and Territory governments to conduct a detailed gap analysis of disposal options for all electronic waste streams to identify where safe collection points should be located, as well as inform future programs and policy decisions.

Recycle Mate is uniquely placed to conduct a nationwide audit on battery and e-waste safe disposal collection points, with information proactively gathered from product stewardship schemes such as Mobile Muster, B-cycle and the National Television and Computer Recycling Scheme, businesses and councils. Recycle Mate is working with the Queensland Government, to conduct such a gap analysis of disposal pathways for the 34 categories of electronic waste, mapping recovery locations against population density. This will result in an interactive data visualisation map, enabling filtered searches of different product categories to show community access to recovery options and quickly identify system gaps.

As the peak industry body for the resource recovery, recycling, and remanufacturing sector in Australia, ACOR is also well placed to initiate the data gathering of critical incidents and battery-related fires that are occurring across the sector.

RECOMMENDATION 1. The Australian Government should **prepare a full catalogue of all items on the market** that are known to be causing, or are capable of causing fires and significant issues in household bins. This includes all products that are a battery, have a battery or are powered by a battery to produce any movement, noise, light or process.

RECOMMENDATION 2. All State and Territory governments to **conduct a detailed gap analysis of disposal options for all electronic waste streams**, to help identify where safe collection points should be located and inform future programs and policy decisions. This should be delivered as an interactive data visualisation map, which enables filtered searches of different product categories to show community access to recovery options to quickly identify system gaps.

RECOMMENDATION 3. The Australian, State and Territory Governments should work together with relevant stakeholders to **fill the identified gaps, so that there is always an easily accessible option for the community** to safely dispose of any problem item. The cataloguing and gap analysis will allow for efficiently targeted allocations of resources to ensure safe disposal pathways.

RECOMMENDATION 4. As an emergency measure, **a safe disposal location for all items must be provided within every council area**, with the support of State Governments. The nationwide response to the presence of needles and syringes in the environment and conventional waste streams in the 1990s could offer a model, in terms of comprehensive access to safe community sharps disposal.

2. A community education campaign

As the number of everyday items containing embedded and sealed batteries increases, a critical priority will be ensuring that these items are diverted away from conventional waste and recycling streams, collected in a safe manner, and directed towards facilities that are equipped to safely process them. Currently, there is a lack of public education and resources around safe disposal, the risks of improper battery disposal, and consumer responsibility for end-of-life batteries.

There must be a well-funded and comprehensive awareness-raising and education campaign. Recycle Mate is an ideal the delivery partner for the education campaign and recycling advice, to avoid duplication of effort and information and maximise the potential of data collection. Through Recycle Mate's data, a targeted, cost-effective evidence-based education campaign could be rolled out across Australia with up-to-date information on collection points, with particular focus on areas where high incorrect disposal rates are reported.

The language surrounding battery disposal should also be addressed. An emphasis must be made on 'safe disposal', rather than 'recycling' of batteries and e-waste. 'Safe disposal' helps emphasise that batteries can be dangerous, whereas people think of 'recycling' as optional. It is essential that we get all batteries out of household and commercial bins and diverted to safe disposal locations.

Furthermore, Recycle Mate's research already shows that many members of the community associate the term 'recycling' with their household bins—and are likely not aware of alternative disposal options. When something is promoted as being 'recyclable', it can give the impression that it can be recycled in their household bins, where batteries become a major problem.

ACOR believes that any consumer education must contain the following elements:

- 1. Risk awareness.** It is necessary for the public to understand the environmental and safety risks posed by improper battery disposal. Awareness must also be raised around products with embedded batteries that consumers may not have considered, such as vapes, digital pregnancy tests and electric toothbrushes.
- 2. Safe disposal methods.** Educate people about the correct disposal methods for batteries in designated battery recycling centres, drop-off locations, or collection programs available across communities. This should also extend to storing batteries safely before disposal and how to identify when batteries are at risk of being unsafe.
- 3. Convenience and accessibility.** Make it easy for people to find nearby collection points or drop-off locations. Provide up-to-date and easy-to-access information on where these facilities are located and what type of batteries they take.

- 4. Broad use of communications channels.** The education campaign should be implemented across multiple channels such as television, social media, and digital advertising, as well as disseminating educational materials in schools, community events, and partnerships with councils, retailers and manufacturers to raise awareness about battery disposal.

ACOR joins with the National Waste and Recycling Industry Council in calling on for a nationwide education campaign for the safe disposal of batteries.¹² We believe that ACOR, with support from our Recycle Mate initiative, is uniquely positioned to deliver this campaign.

RECOMMENDATION 5. Once a comprehensive collection network is assured, **a comprehensive awareness-raising and education campaign should be launched** nationally to ensure the public understands the risks of batteries in bins, how they can access the existing safe disposal options, and how batteries and e-products can be recycled if they are deposited in the right place. The messaging must be centred on ‘safe disposal’ rather than ‘recycling’.

3. E-stewardship reform

With rapid digitisation and the market expansion of battery-powered and smart devices, it is essential that product stewardship schemes take the full breadth of products available on the market.

It is understood that DCCEE is designing an expanded product stewardship scheme for small electrical and electronic equipment (SEEE) and small-scale PV systems. The scope is expected to include any SEEE weighing less than 20 kg, and solar PV systems, including solar panels, racks, inverters and wiring, with household batteries considered for inclusion. The scheme would also include embedded batteries, but not loose batteries, which are proposed to still be captured by the B-cycle scheme.

It is essential that the Federal e-stewardship program continues these reforms to deliver an integrated scheme covering all small e-products and batteries and leaving no gaps in relevant product categories. Under the model currently under consideration, e-waste recyclers are facing the confusing situation of at least three product stewardship schemes covering and excluding different battery types: the current National Television and Computer Recycling Scheme, Mobile Muster and B-cycle.

Under the current NTCRS scheme, scheme operators, called co-regulators, are funded by brand owners to only collect a certain volume per year and can and do cease to fund e-waste recycling when those quotas are filled. Furthermore, the uncertainty caused by the scheme review has led to co-regulators reducing the volume of e-products being funded for recycling even further, as they shore up balance sheets in anticipation of a changing regulatory environment. As e-product to landfill bans are implemented around Australia, and the recycling sector bears the brunt of improperly regulated battery collection, the need for holistic and comprehensive extended producer responsibility for battery collection is greater than ever before, as well as strong instructions to the existing NTCRS co-regulators to continue to fund e-product collection and recycling through the scheme at existing levels to avoid worsening an already critical situation.

Furthermore, ACOR recommends that the Australian Government introduce regulations that mandate a deposit scheme to be fully funded by all manufacturers and importers of batteries and products that contain batteries in any form. There must be much stronger incentives to mobilise the population to safely draw them out of waste and recycling streams and towards safe disposal locations.

While some product stewardship schemes may have achieved desirable recovery rates for end-of-use items without incentivisation beyond ‘doing the right thing’, this is not the case across all product categories. Schemes that provide little incentive for consumers to return items to away-from-home collection points generally result in poor recovery rates. A model to consider is the container deposit scheme (CDS), providing a refund for the return of these items. By offering a financial incentive for returning containers, CDS encourages individuals to recycle. People will participate in collection efforts if there's a tangible reward such as a monetary incentive for each container returned.

¹² <https://www.nwric.com.au/download/1149/?tmstv=1679277906>

It is evident that the health and environment risks of disposing of batteries incorrectly are not enough of a deterrent or not widely enough understood for the average community member to always seek out a safe disposal option. The CDS strategy works by aligning economic incentives with environmental goals, and when applied to battery disposal would be a game-changing driver for encouraging safe collection behaviours.

RECOMMENDATION 6. As soon as practicably possible, the Australian Government must **enact extended producer responsibility (EPR) regulation for consumer electronic products** to fully fund safe collection, and where possible, recycling. Such regulation must deliver an integrated scheme covering all consumer e-products, including batteries and items containing batteries (including vapes), and leaving no gaps in relevant product categories.

RECOMMENDATION 7. Establish a deposit scheme similar to the CDS model to encourage community safe disposal of batteries and products containing batteries, providing a tangible reward to safe disposal behaviour. Lessons should be drawn from the container deposit schemes that have been established in States and Territories across Australia, prioritising safe collection methods and a strong deposit rate to support high recovery rates.

4. Regulatory harmonisation and enforcement

The recycling and waste management sector has long faced a fragmented, variable and duplicative regulatory environment across Australia's States and Territories, undermining investor confidence in infrastructure and impeding innovation. While laws and regulations for waste and recycling are implemented at a State level, there is an increasing need for harmonisation and enforcement at a national level to prioritise circular economy outcomes. This is especially critical in the battery and e-waste space dealing with hazardous waste components.

WMRR has noted the necessity of battery and e-product regulation, and called on the Australian Government to institute a comprehensive regime, akin to those instituted in Europe, highlighting that the proposed national e-waste scheme scope is too narrow, ignoring key elements such as resign and repair.¹³

The European Union's Batteries Regulation aims to ensure that future batteries have a reduced carbon footprint, contain fewer harmful substances, rely less on raw materials sourced from non-EU countries, and undergo extensive collection, supporting a high degree of reusability and recycling. This initiative aligns with the circular economy goals outlined in the European Green Deal, marking a milestone in European legislation by encompassing the entire life cycle of batteries—from sourcing and manufacturing to usage and recycling—within a singular law. This comprehensive approach underscores the commitment to sustainability and the EU's objectives of securing raw material supply.¹⁴

In line with Lithium-ion batteries' classification as dangerous goods under the Australian Dangerous Goods Code, it is imperative that the Australian government also institutes national standards and regulations for battery disposal collection points. CSIRO's report for the ACCC notes that 'Current collections occur in public places and stores which can pose a hazard to people and property in the event of fire ... Harmonisation would assist in collection and recycling rates and minimise safety hazards especially for damaged batteries.'¹⁵ Consequently, they recommend the implementation of separate boxes for either damaged/faulty batteries and exhausted/visually intact batteries.

Collection guidelines exist in many State and Territory jurisdictions, but are generally not enforced. For example, the Environment Protection Authority of Victoria has produced extensive guidelines on the storage

¹³ https://www.linkedin.com/posts/wmrr_international-e-waste-day-australia-needs-activity-7118902238139359232-gQLi/

¹⁴ https://environment.ec.europa.eu/news/new-law-more-sustainable-circular-and-safe-batteries-enters-force-2023-08-17_en

¹⁵ <https://www.productsafety.gov.au/system/files/CSIRO-ACCCLithiumIonBatteries.pdf>

and management of waste batteries¹⁶ and is widely considered a benchmark document. However these guidelines are often simply not adhered to because there are no regulatory consequences for non-compliance.

A key component to acknowledging the serious economic and environmental risks posed by the unsafe disposal of batteries and e-waste would be to implement stronger rules for collection and disposal of batteries and ensure penalties are applied for noncompliance. Holding individuals and businesses to account over the irresponsible collection and disposal of batteries and e-waste would send a clear message about the serious risks and consequences these actions place upon community health, the environment, workplace safety and property.

RECOMMENDATION 8. The Australian Governments should work with State and Territory Governments to **institute national standards and regulations for battery disposal collection points**, with clearly understood and enforceable consequences for non-compliance.

RECOMMENDATION 9. State and local governments should work together, in partnership with industry, to ensure compliance with existing rules relating to battery disposal. It is essential that penalties instituted for non-compliance with the end-of-use disposal requirements for batteries under current regulations are enforced.

RECOMMENDATION 10. The Australian Government must ensure NTCRS co-regulators continue to fund e-product collection and recycling at current levels while the new scheme is designed.

Conclusion

The escalating hazards posed by batteries in conventional waste and recycling streams demand immediate attention. The increasing incidents resulting in property damage, injuries, and financial burdens underscore the urgent need for Australian governments, producers and recyclers to work together and take comprehensive action. While the issue of battery safety spans the community at large, the paramount concern for the recycling sector is addressing environmental end-of-use risks to sector and community.

Governments have a pivotal role to play in ensuring safe battery disposal. Critical actions include establishing a comprehensive collection network, initiating robust community education campaigns, reforming e-stewardship practices, and enforcing harmonised regulations. Regulatory inconsistencies currently undermine safe disposal rates, the effectiveness of stewardship schemes, and pose risks throughout the disposal logistics chain, leading to economic impacts on recyclers and the broader resource sector.

ACOR's proposes cataloguing of problematic items and the recommendation for a fully funded battery stewardship program by manufacturers and importers aim to mitigate these risks. Moreover, deposit schemes have proven successful in driving stronger collection outcomes. Aligning economic incentives with environmental goals, as demonstrated by the success of container deposit schemes, will serve as a pivotal strategy in encouraging responsible battery disposal and recycling practices.

¹⁶ <https://www.epa.vic.gov.au/about-epa/publications/2018>