



## INQUIRY INTO AUSTRALIA'S WASTE MANAGEMENT AND RECYCLING INDUSTRIES

PO Box 6022  
House of Representatives  
Parliament House  
Canberra ACT 2600

2 March 2020

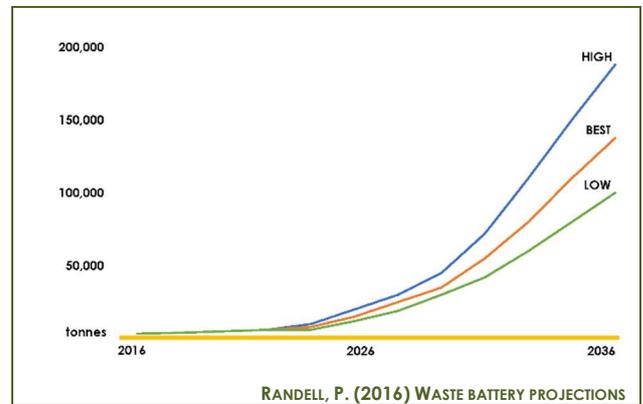
To whom it may concern,

The Australian Battery Recycling Initiative (ABRI) is the peak body representing the battery industry in Australia. It is a not-for-profit association established in 2008 to promote responsible environmental management of batteries at end of life.

### Exponential increase in generation of waste batteries

Australia's reliance on battery powered technology is ever growing and generation of waste batteries is also set for a rapid and exponential increase. Given the material security and safety issues associated with the end-of-life management of batteries, it is critical we prepare now to avoid future problems.

By planning ahead, we can forestall this problem and instead create a viable strong local recycling sector able to contribute to Australia's economy and provide essential resources to other parts of the world.



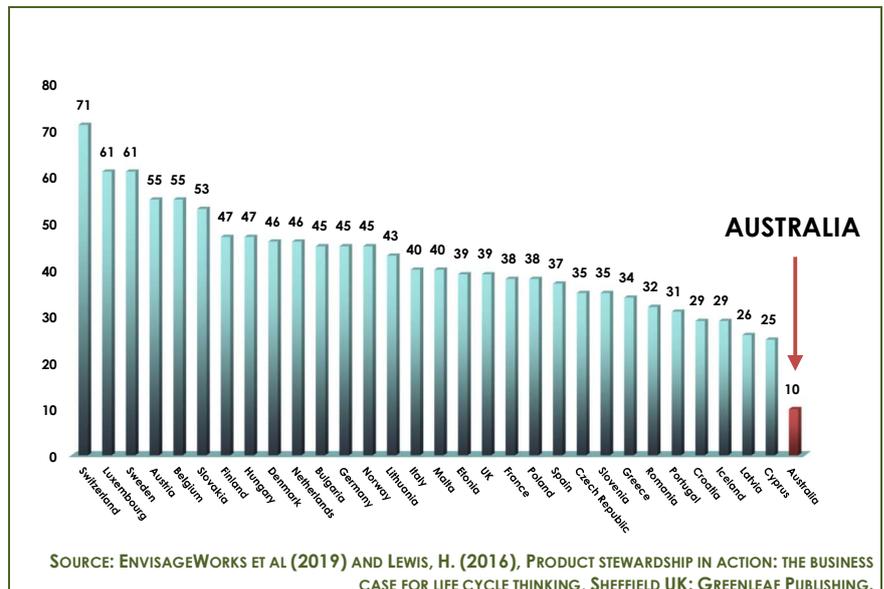
### Material security

Materials contained in batteries are finite, for the most part highly recyclable, and essential for future energy security. From [recent research](#) conducted in the United States, an analysis of material security with regard to key metals contained in batteries e.g. cobalt and lithium, we can infer that demand for limited resources will increase significantly in the future – either directly or via limited access to battery powered products. By transforming the battery recycling sector, Australia will be well placed to secure our own need for these materials and secure export markets for these increasingly scarce materials.

### Current collection rates

Used lead acid batteries (ULAB) are collected for recycling at a rate of more than 95%, yet other batteries, NiCad, Lithium, Alkaline etc are only collected at a rate of 10%. This compares very poorly with other countries in the world.

Preliminary findings from a recent report prepared by EnvisageWorks in partnership with Marsden Jacob Associates, Randell Environmental Consulting and Sustainable Resource Use, estimated that the battery recycling sector currently contributes approximately \$31m dollars to Australia's GDP. It is easy to see this value escalating upon the introduction of the Battery Stewardship Scheme ([www.bsc.org.au](http://www.bsc.org.au)) which is being established to rapidly increase collection and recycling.





### What are the risks?

<p><b>COMMUNITY SAFETY</b></p> <p>Perhaps the biggest risk is community safety. Both improper storage in the home and disposal to landfill can create a very real fire risk. The loss of a home is extremely serious, but the impact of a landfill fire effects many more lives with the release of dioxins and other toxins into the atmosphere.</p>	<p><b>LOSS OF RESOURCES</b></p> <p>Batteries are mostly comprised of metals &amp; plastic. Disposal to landfill means these resources are locked up from further use. In a circular economy, we would see valuable resources used again, capturing metals &amp; reducing the need for extraction of raw materials.</p>	<p><b>EXPORT LIABILITY</b></p> <p>Shipping lines are starting to restrict shipping of batteries due to fire risk. In recent years port fires caused by batteries have raised alarm bells. The trend is to disallow export, reducing access to overseas solutions. Local certainty and investment is needed to secure onshore solutions.</p>
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### What are the opportunities?

<p><b>PROVEN APPROACH</b></p> <p>Product Stewardship in Australia is delivering results for products such as computers and televisions, and mobile phones. Similar schemes have been operating Europe since 1991 and more recently in the US. We can build on the experience of these schemes to create an effective and efficient scheme for batteries.</p>	<p><b>WE HAVE CAPABILITY</b></p> <p>Australia recycles more than 90% of lead acid batteries. This has created expertise &amp; infrastructure we can draw on for other types of batteries. We can also learn from the experience of some retailers, state governments, and councils who provide drop off facilities for batteries.</p>	<p><b>LOCAL INVESTMENT</b></p> <p>Shipping lines are beginning to restrict shipping of batteries due to the fire risk. If this continues as expected, exporting the problem will not be an option. A battery stewardship scheme would see investment in local solutions and green jobs.</p>
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## SUMMARY OF RECOMMENDED ACTIONS TO PROMOTE INDUSTRY DEVELOPMENT & THE SECURITY OF RECYCLING SECTOR

We appreciate the opportunity to provide recommendations for policy settings that could stimulate growth and innovation while also solving the problem of battery waste in Australia. The following are a summary of key actions required to stimulate growth and innovation; however we also attach a presentation that goes into more depth.

### HARMONISATION

**Action 1: Establish clear, straight forward and nationally consistent regulations for storage and transport of all used batteries**

- ◆ Review waste codes to enable a single waste code for all battery chemistries to augment existing chemistry-based codes.
  - ◆ A standardised approach for all batteries would enable the lead acid battery industry to participate in the collection of mixed batteries making their national network (>15000 collection points) available to quickly increase collection of mixed batteries
  - ◆ Establish single point reporting (implementing the excellent report titled "[National Hazardous Waste Tracking and Data Summary Report](#)")
- ◆ Facilitate consistent definitions of hazardous, controlled, prescribed wastes across state / territory lines.

### CIRCULAR ECONOMY

**Action 2: Change in policy to recognise waste as a resource**

- ◆ Review terminology to re-characterise waste as a resource

**Action 3: Provide Government funding for applied research to facilitate innovation in collection modalities, pre-processing and processing (Grants / accelerated depreciation / loans)**

**Action 4: Increase Government infrastructure investment**

- ◆ All government infrastructure projects to include end-of-life plan for batteries
- ◆ All government energy storage grants to require an end-of-life plan for batteries
- ◆ Funding for ABRI to promote path forward & solutions nationwide

**Action 5: Government and industry investment in pilots for de-centralised pre-processing**

- ◆ Regional pre-processing would greatly enhance safety and reduce the cost of transport to processing facilities

**Action 6: Government focus on circular economy success stories in media communications****Action 7: Procurement policies that support purchase of recycled content and use of onshore recyclers for government batteries**

- ◆ Support for infrastructure funding to develop onshore processing capacity

**PRODUCT STEWARDSHIP****Action 8: Establish a mechanism to address free-riding across all priority products**

- ◆ Introduction of a light touch change that would see a new “industry-lead Scheme” category that required industry to act by addressing the free-rider issue but allowing industry to then have full responsibility for scheme design, operation, performance management and reporting.

**Action 9: A dedicated project to evaluate options for identification of parallel imports**

- ◆ Internet sales are increasingly replacing traditional retail models and largely fall under the radar with regard to stewardship responsibilities
- ◆ This is an issue that goes well beyond batteries and is a major concern for battery importers and retailers

**Action 10: Continued support for the Battery Stewardship Scheme**

- ◆ Government procurement priority for brands participating in the BSC
- ◆ Inclusion of battery stewardship requirements and referrals for importers of batteries
- ◆ Review of import codes to clearly identify products with embedded batteries

**Action 11: A blanket ban on batteries to landfill upon launch of the Battery Stewardship Scheme****BEST PRACTICE EDUCATION & INNOVATION****Action 12: Investment in understanding emerging occupational, health and safety risks**

- ◆ Safe transport / containerisation
- ◆ Control of airborne nano-particulates in battery processing facilities
- ◆ Handling charged materials
- ◆ Management of electrolytes & organic solvent

**Action 13: Funding to create guidance and educate**

- ◆ Collection and storage best practices
- ◆ Facility management
- ◆ Safe treatment of EV batteries
- ◆ Safe collection containers
- ◆ Fire reduction measures and equipment

**MATERIAL SECURITY****Action 14: Establish a project to investigate Australia's Risk and Reliance Profile with regard to essential metals similar to that conducted by the USGS titled “Risk & Reliance: The U.S. Economy and Mineral Resources”**

- ◆ This will demonstrate the value in investing in Australia's battery collection and recycling sectors



## EFFICIENCY & ENFORCEMENT

### Action 15: Review of import/export permitting process

- ◆ Review of permit fees (cost recovery & enforcement)
- ◆ ABRI can be a helpful resource

### Action 16: Increased resources for the Department of Environment & Energy

- ◆ Enable enforcement of the Hazardous Waste Act
- ◆ Review & improvement of the Product Stewardship Act

### Action 17: Require government investments (e.g. Arena) to require projects to have an end of life plan for batteries

### Action 18: Levelling the playing field by providing / facilitating resources for enforcement of the Australian Dangerous Goods Code

## TRANSBOUNDARY MOVEMENT

### Action 19: A review of the costs/approval times import permits to encourage Australian recyclers to aid pacific nations in solving a serious waste issue

### Action 20: Address the lack of enforcement around transboundary movement of batteries as it is believed that illegal export of batteries is reducing the viability of responsible battery recyclers

### Action 21: Improve transparency of decisions regarding approval of export permits

- ◆ Commercial decision making is compromised in the context of an apparent lack of consistency in approval processes

We would welcome the opportunity to talk with you further on these subjects.

Best regards

LIBBY CHAPLIN  
CEO  
AUSTRALIAN BATTERY RECYCLING INITIATIVE



# Improving industry resilience & capacity in the Australian battery recycling sector

Inquiry into Waste and Recycling Industry  
3<sup>rd</sup> March 2020



Who are we?

Ben Pritchard, President

Libby Chaplin, CEO

Daryl Moyle, Treasurer

# Who is ABRI?



High use sectors  
e.g. mining



Energy storage  
sector & installers



Importers  
& brands



Retailers



Automotive,  
services & fleets



Electric vehicles  
& e-bikes



Research  
organisations



Government  
agencies



e-waste  
collectors



Logistics &  
transport companies



Waste & recycling  
contractors



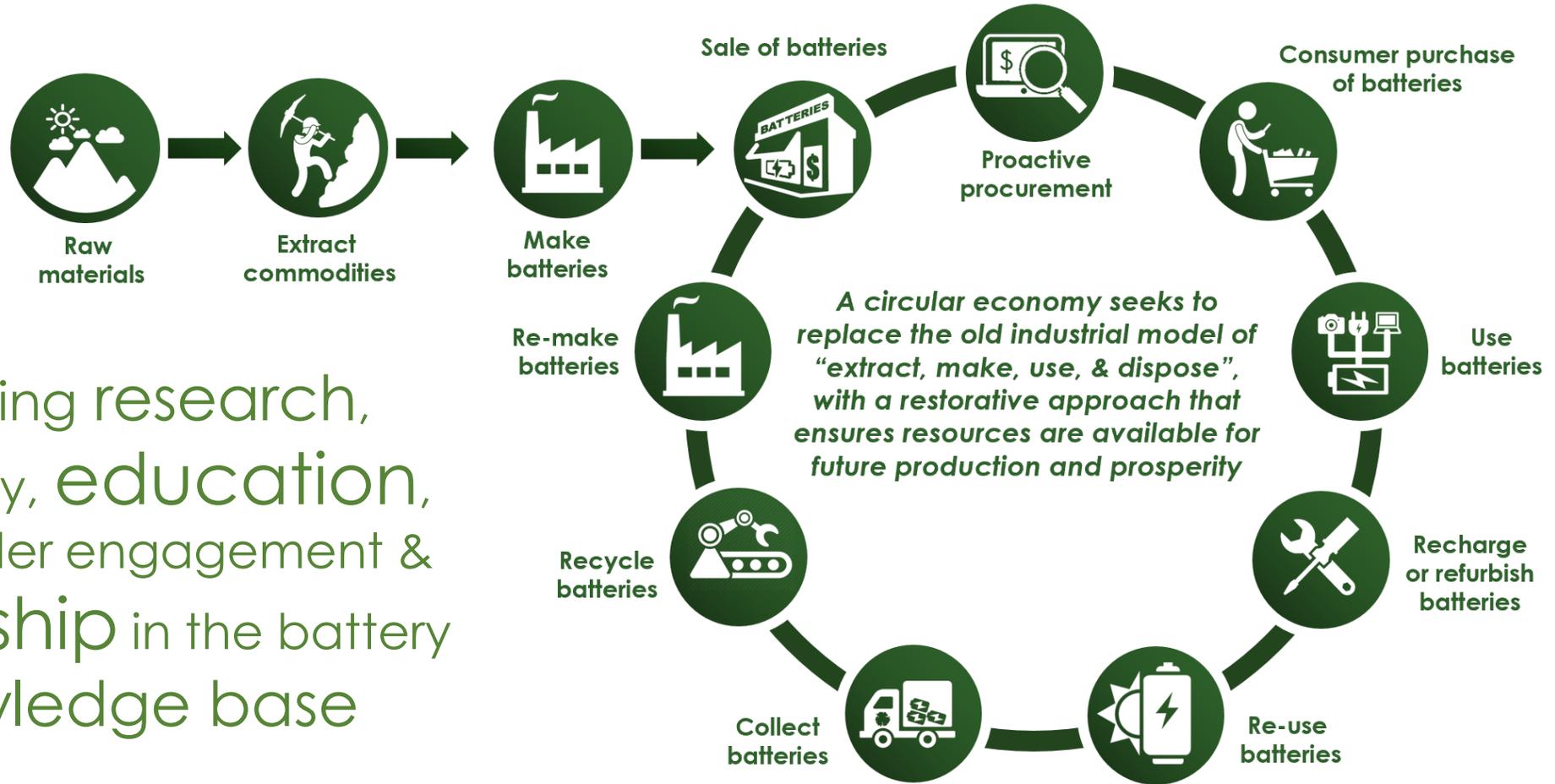
Battery  
recyclers

- Consolidated Industry voice on battery industry issues
- **Central point of contact for used battery solutions**
- Hub for collaboration and networking
- **Access to the latest research & market knowledge**
- **Corporate visibility for members**
- **Industry development & capacity building**
- **Guidance for safe & responsible management of batteries**

# Members



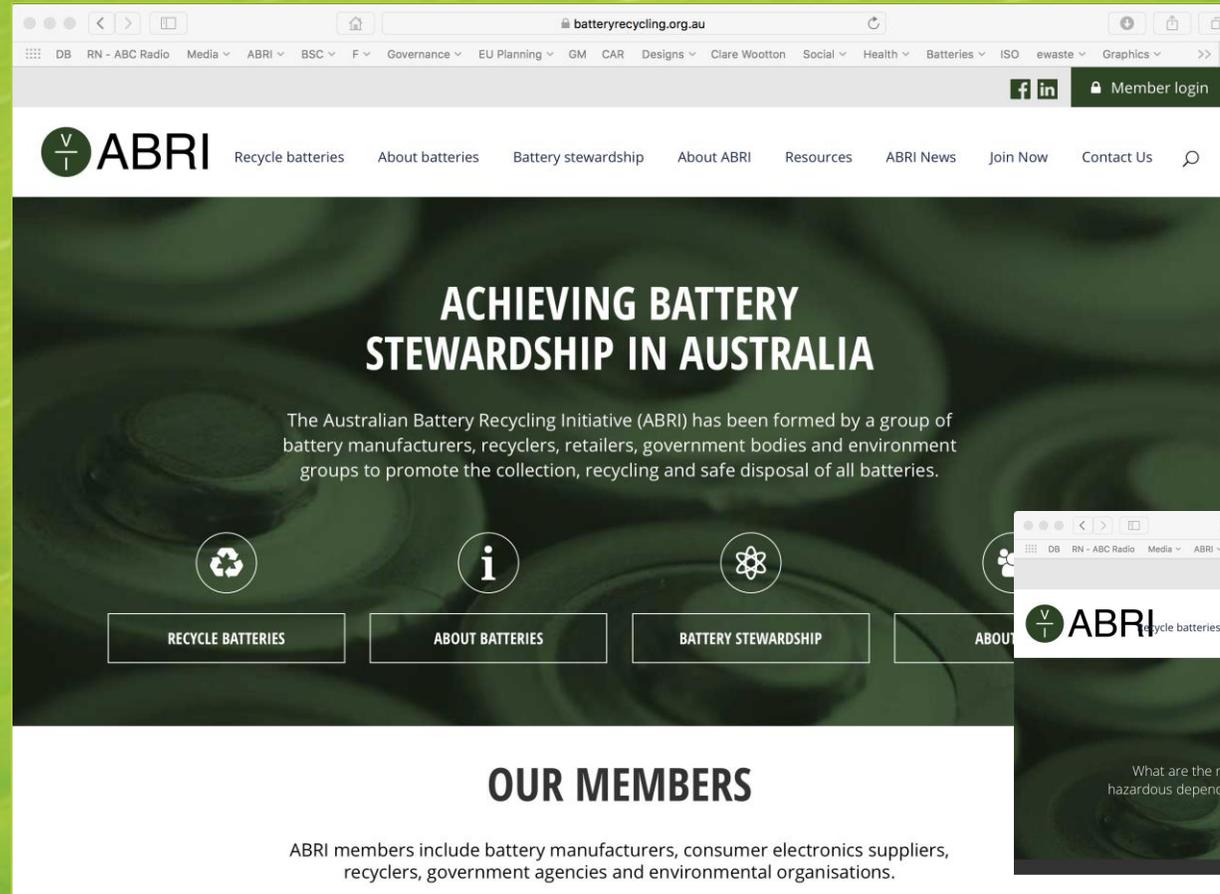
# ABRI vision is to facilitate a circular economy



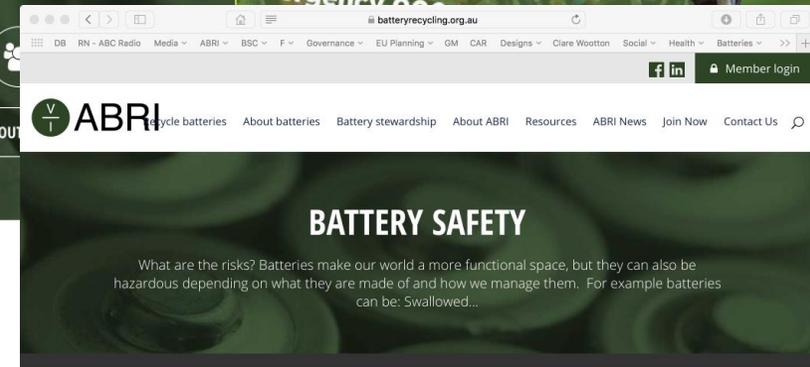
Providing research, advocacy, education, stakeholder engagement & leadership in the battery knowledge base

ABRI is the first point of call for information on battery stewardship & recycling

# Solutions orientated



The screenshot shows the homepage of the Australian Battery Recycling Initiative (ABRI) website. The header includes the ABRI logo and navigation links: Recycle batteries, About batteries, Battery stewardship, About ABRI, Resources, ABRI News, Join Now, and Contact Us. The main content area features the heading "ACHIEVING BATTERY STEWARDSHIP IN AUSTRALIA" and a sub-heading "The Australian Battery Recycling Initiative (ABRI) has been formed by a group of battery manufacturers, recyclers, retailers, government bodies and environment groups to promote the collection, recycling and safe disposal of all batteries." Below this is a navigation bar with icons for Recycle Batteries, About Batteries, Battery Stewardship, and About ABRI. The bottom section is titled "OUR MEMBERS" and states: "ABRI members include battery manufacturers, consumer electronics suppliers, recyclers, government agencies and environmental organisations."



The screenshot shows the "BATTERY SAFETY" page on the ABRI website. The heading is "BATTERY SAFETY". The text reads: "What are the risks? Batteries make our world a more functional space, but they can also be hazardous depending on what they are made of and how we manage them. For example batteries can be: Swallowed...". Below the text is a list of risks:

- Swallowed by children causing death or serious injury (button cell batteries)
- Flammable
- Corrosive
- Shocking
- Heavy



## Festival of Ideas ~ 2020 objectives



**Influence effective  
& harmonised  
government policy**



**Facilitate national  
stewardship &  
circular economy**



**Foster best practice  
in Australia &  
internationally**



**Promote battery  
stewardship  
solutions**



**Sustain & expand  
ABRI's membership  
& revenue base**

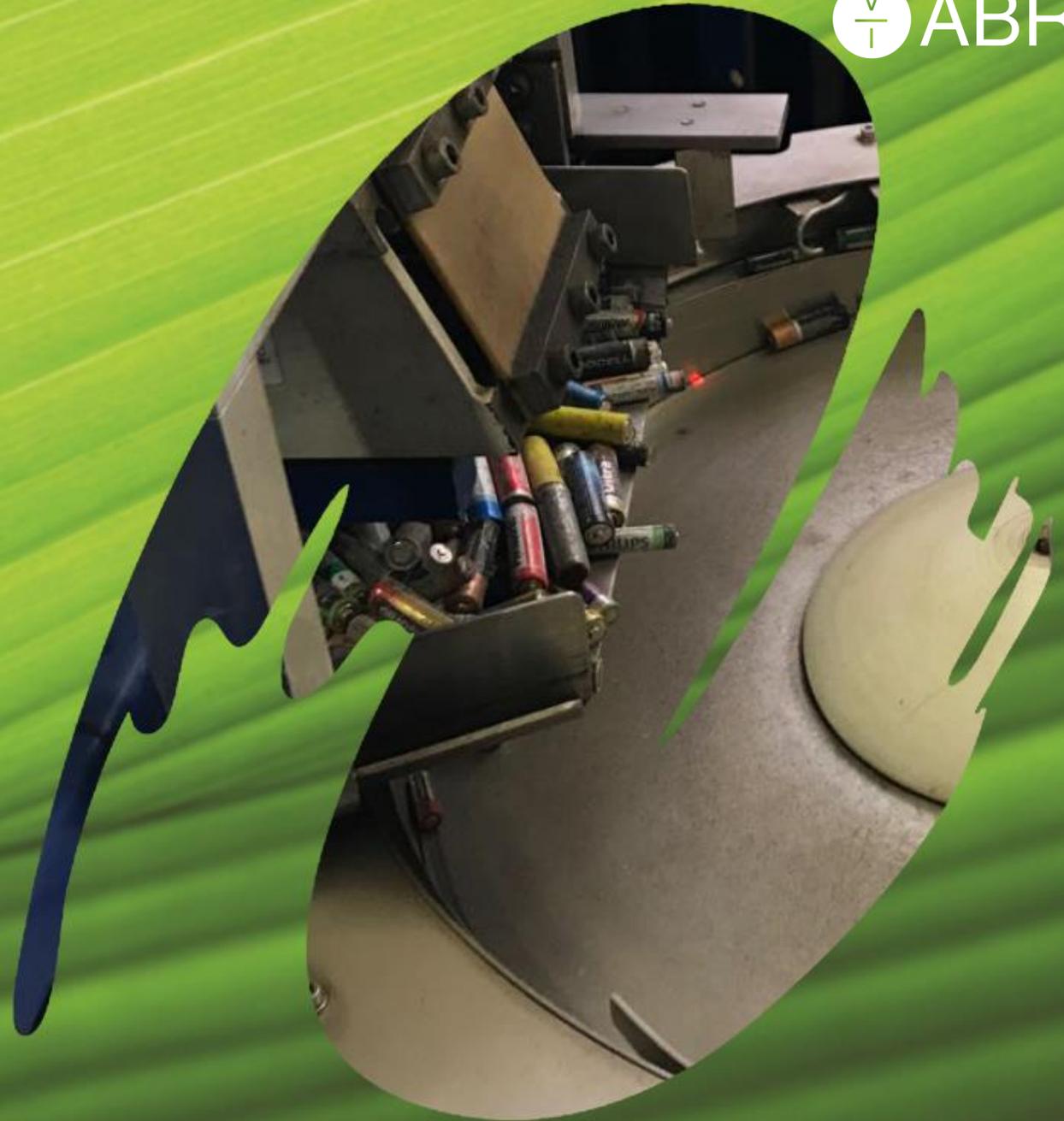


**Effective secretariat  
governance &  
operations**



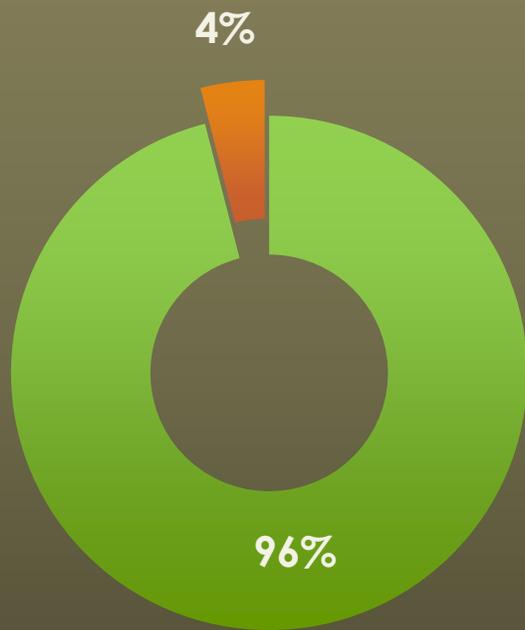
## Purpose of today

To explore opportunities  
for improving resilience &  
capacity in the Australian  
battery recycling sector



# Status of the battery market

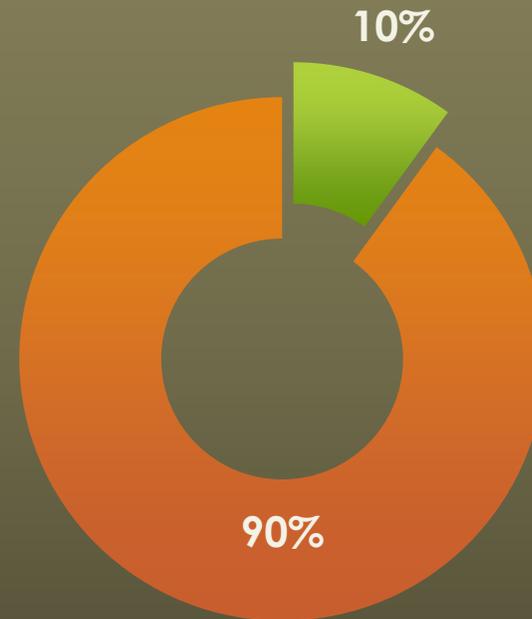
## LEAD ACID BATTERIES (Car, truck, etc)



■ Collected for recycling ■ Landfilled

Maintain success

## CONSUMER BATTERIES (AA, AAA, etc)

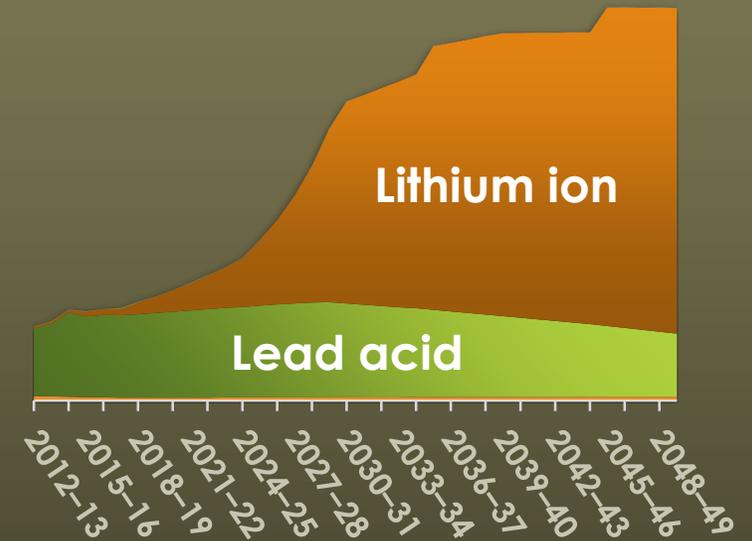


■ Collected for recycling ■ Landfilled

Battery Stewardship essential to address market failure

## ENERGY STORAGE & ELECTRIC VEHICLE BATTERIES

Collection rate very low, but sales are projected to rise exponentially



# Battery industry capacity & resilience

# Future Proofing Battery Stewardship

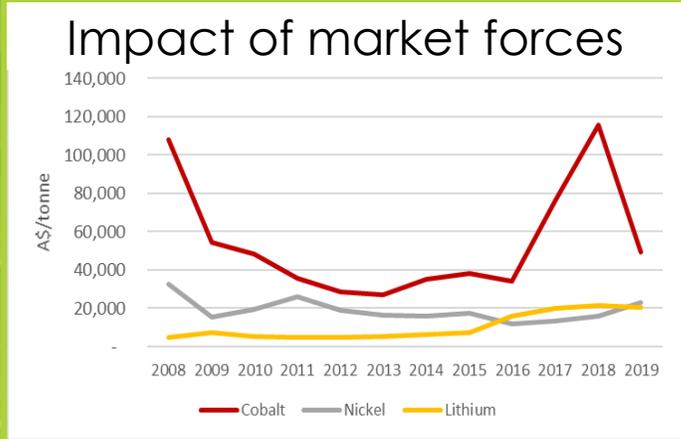


Action is needed to retain existing recyclers and remove barriers to entry



1

## Commodity prices & changing battery technology



- Evolving battery chemistries creates challenging investment environment
- Commodity prices impact the value of materials resulting from battery recycling

## IMPROVING BATTERY INDUSTRY CAPACITY & RESILIENCE

1

Commodity prices &  
changing battery  
technology

➔ **Recognition that these two factors create uncertainty and underline the importance of government harmonisation & enforcement**

# Battery industry capacity & resilience

2

Circular economy



## KEY FACTORS

- **Benefits of building a circular economy for all batteries**
  - Basel convention obligations
  - Effectiveness of EH&S controls in Australia
  - End market security
    - Risk in transporting overseas
    - Insurance
- **Procurement key to securing a circular economy**
  - Federal / State / Local
- **Vertical integration will improve industry efficiency**
  - Divert material from landfill
  - Support manufacturing in Australia
  - Add value in Australia
  - Provide certainty for investment in battery recycling innovation

## IMPROVING BATTERY INDUSTRY CAPACITY & RESILIENCE

2

Circular economy

- ➔ **Government procurement to support market certainty**
- ➔ **Government funding for applied research**
  - Grants / Accelerated depreciation / Loans
- ➔ **Government infrastructure investment**
  - Local energy storage with end of life plans
  - Pilots for de-centralised pre-processing
  - All government infrastructure projects to include end-of-life plan for batteries
  - Funding for ABRI to promote path forward & solutions nationwide
- ➔ **Government focus on circular economy success stories in media communications**

# Building industry capacity & resilience

3

Stewardship

## KEY FACTORS

### Market failures

- Collection, sorting, & processing

### Stewardship is the solution

- Shared responsibility is an essential part of the solution
- Stewardship is needed to solve the battery waste problem
- International best practice shows that it works
- Important that government, industry and the community are engaged
  - There can be no free riders



## IMPROVING BATTERY INDUSTRY CAPACITY & RESILIENCE

3

Stewardship

- ➔ **A blanket ban on batteries to landfill**
- ➔ **Continued support for the Battery Stewardship Scheme**
- ➔ **Light regulation to engage free-riders**
- ➔ **Commitment to regulate if an industry led scheme is not successful**
- ➔ **Government procurement priority for brands participating in the BSC**

# Battery industry capacity & resilience

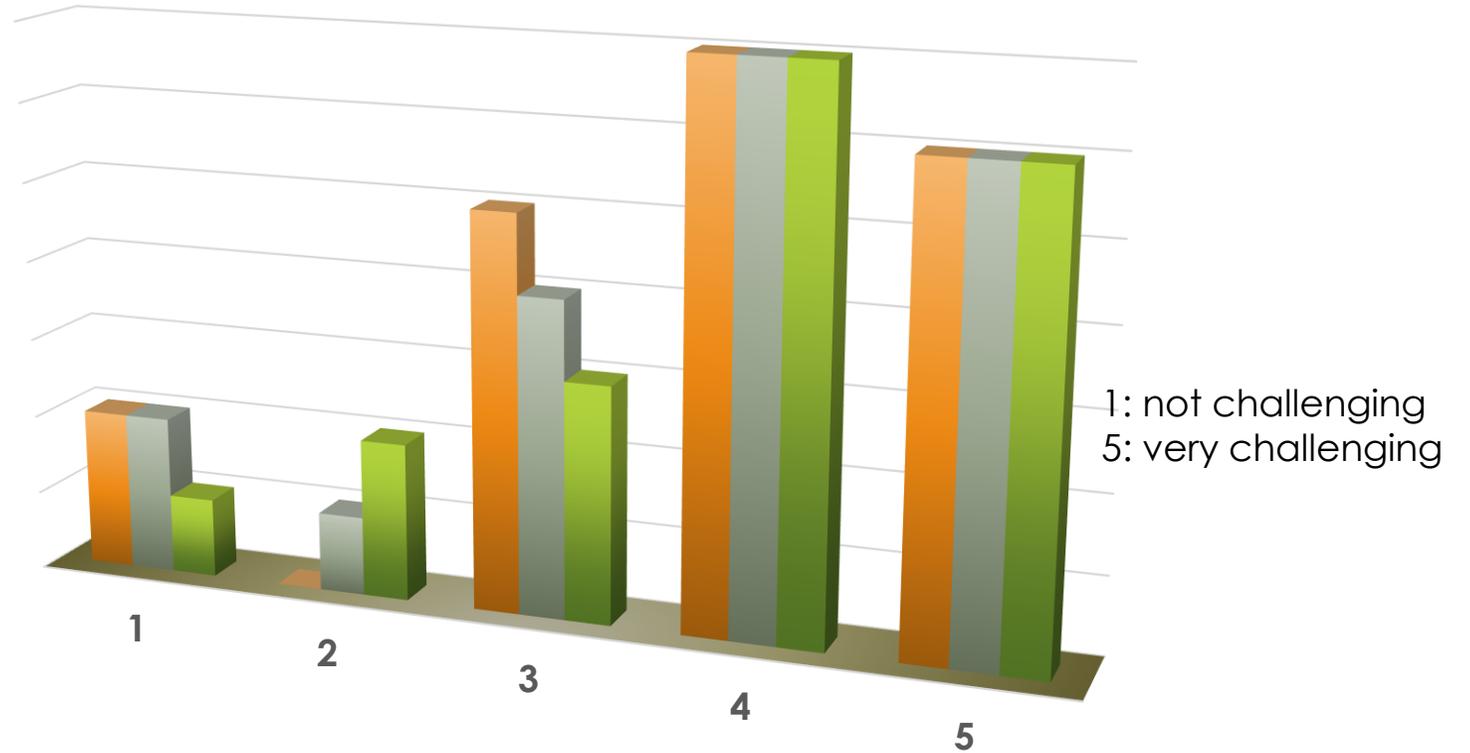
4

Harmonisation



## KEY FACTORS

On a scale of 1-5, how challenging are the differing transport requirements across jurisdictions



- Multiple and differing state regulations for the implementation of the Australian Dangerous Goods Code
- Multiple and differing state tracking processes/platforms
- Lack of information regarding changing storage and transport requirements for handheld batteries



## KEY FACTORS

### Where do we see dis-harmonisation?

- **Each state and territory government implements waste and transport regulation inconsistently**
  - Across jurisdictions
  - Different for different battery types
  - Requirements, definitions, and reporting methods
- **Creates confusion & promotes non-compliance which results in an unlevel playing field**
  - Transport regulations – state EPAs
  - Storage and facility permitting

## IMPROVING BATTERY INDUSTRY CAPACITY & RESILIENCE

4

Harmonisation

- ➔ **DIGITAL SINGLE POINT USED BATTERY MOVEMENT REPORTING**
- ➔ **Establishment of a single waste code for companies wishing to store or transport a variety of chemistries**
- ➔ **Clear, straight forward and nationally consistent regulations**
  - Storage and transport of all used batteries
  - Standardised approach for all batteries (WA as a good model – D221 covers all batteries)

# Battery industry capacity & resilience

5

Best practice  
education &  
innovation



## KEY FACTORS

### Importance of best practices for building capacity and resilience

- Risk profile of the industry is changing
- Knowledge of best practice is in the early stages
- ABRI well connected and very engaged in the international discussions

## IMPROVING BATTERY INDUSTRY CAPACITY & RESILIENCE

5

Best practice  
education &  
innovation

- ➔ **Investment in understanding emerging occupational, health and safety risks**
  - Safe transport / containerization
  - Control of airborne nano-particulates
  - Handling charged materials
  - Management of electrolytes & organic solvent
  
- ➔ **Funding to create guidance and educate**
  - Collection and storage best practices
  - Facility management
  - Safe treatment of EV batteries
  - Safe collection containers
  - Fire reduction measures and equipment



## KEY FACTORS

### Batteries are comprised of finite resources

- The United States Geological Survey has determined that metals contained in batteries present a risk to material security (See following slide).
- Materials contained in batteries include Cobalt, Tantalum, Lithium, Graphite, Manganese, Zinc to name a few.
- Material security is an issue that is gaining increasing attention and Australia is unlikely to be immune.
- Recovery and recycling of battery materials onshore presents a very real opportunity to improve our material security over time.



USGS 2018

## 2018 U.S. Net Import Reliance

### 2018 U.S. NET IMPORT RELIANCE<sup>1</sup>

Commodity	Percent	Major import sources (2014-17) <sup>2</sup>
ARSENIC (trioxide)	100	Morocco, China, Belgium
ASBESTOS	100	Brazil, Russia
CESIUM	100	Canada
FLUORSPAR	100	Mexico, Vietnam, South Africa, China
GALLIUM	100	China, United Kingdom, Germany, Ukraine
GRAPHITE (natural)	100	China, Mexico, Canada, Brazil
INDIUM	100	China, Canada, Republic of Korea, Taiwan
MANGANESE	100	South Africa, Gabon, Australia, Georgia
MICA (sheet, natural)	100	China, Brazil, Belgium, Austria
NEPHELINE SYENITE	100	Canada
NIوبيUM (columbium)	100	Brazil, Canada, Russia, Germany
RARE EARTHS (compounds and metals) <sup>3</sup>	100	China, Estonia, France, Japan
RUBIDIUM	100	Canada
SCANDIUM	100	Europe, China, Japan, Russia
STRONTIUM	100	Mexico, Germany, China
TANTALUM	100	Brazil, Rwanda, Australia, Congo (Kinshasa)
THORIUM	100	India, United Kingdom
VANADIUM	100	Austria, Canada, Republic of Korea, Russia
GEMSTONES	99	India, Israel, Belgium, South Africa
BISMUTH	96	China, Belgium, Mexico, Republic of Korea
YTRIUM	>95	China, Estonia, Japan, Republic of Korea
POTASH	92	Canada, Russia, Belarus, Israel
TITANIUM MINERAL CONCENTRATES	91	South Africa, Australia, Canada, Mozambique
DIAMOND (dust, grit, and powder)	89	China, Ireland, Republic of Korea, Romania
ANTIMONY (oxide)	85	China, Thailand, Belgium, Bolivia
ZINC	85	Canada, Mexico, Peru, Australia
BARITE	84	China, India, Mexico, Morocco
RHENIUM	84	Chile, Germany, Belgium, Poland
STONE (dimension)	82	Brazil, China, Italy, Turkey
TIN	78	Indonesia, Malaysia, Peru, Bolivia
ABRASIVES, fused Al oxide (crude)	>75	China, France, Hong Kong, Canada
ABRASIVES, silicon carbide (crude)	>75	China, Netherlands, South Africa, Romania
BAUXITE	>75	Jamaica, Brazil, Guinea, Guyana
TELLURIUM	>75	Canada, China, Germany
TITANIUM (sponge)	75	Japan, Kazakhstan, Ukraine, China
PLATINUM	73	South Africa, Germany, United Kingdom, Italy
CHROMIUM	71	South Africa, Kazakhstan, Russia
PEAT	70	Canada
GARNET (industrial)	68	Australia, India, South Africa, China
SILVER	65	Mexico, Canada, Peru, Republic of Korea
COBALT	61	Norway, China, Japan, Finland
NICKEL	52	Canada, Norway, Australia, Russia
GERMANIUM	>50	China, Belgium, Germany, Russia
IODINE	>50	Chile, Japan
IRON OXIDE PIGMENTS (natural)	>50	Cyprus, Spain, France, Austria
IRON OXIDE PIGMENTS (synthetic)	>50	China, Germany, Brazil, Canada
LITHIUM	>50	Argentina, Chile, China, Russia
TUNGSTEN	>50	China, Bolivia, Germany, Canada
ALUMINIUM	50	Canada, Russia, United Arab Emirates, China
MAGNESIUM COMPOUNDS	48	China, Canada, Australia, Brazil
ALUMINA	45	Australia, Brazil, Suriname, Jamaica
SILICON	34	Russia, Brazil, Canada, China
PALLADIUM	33	South Africa, Russia, Italy, United Kingdom
COPPER	32	Chile, Canada, Mexico
VERMICULITE	30	South Africa, Brazil, China, Zimbabwe
LEAD	29	Canada, Mexico, Republic of Korea, India
PUMICE	29	Greece, Iceland, Mexico
SALT	28	Chile, Canada, Mexico, Egypt
MICA (scrap and flake, natural)	26	Canada, China, India, Japan
PERLITE	25	Greece, Mexico, Turkey
BROMINE	<25	Israel, Jordan, China
CADMIUM	<25	Canada, Australia, China, Belgium
MAGNESIUM METAL	<25	Israel, Canada, United Kingdom, Mexico
IRON and STEEL	24	Canada, Brazil, Republic of Korea

<sup>1</sup>Not all mineral commodities covered in this publication are listed here. Those not shown include mineral commodities for which the United States is a net exporter (abrasives, metallic, boron; clays; diatomite; gold; helium; iron and steel scrap; iron ore; kyanite; molybdenum concentrates; sand and gravel, industrial; selenium; soda ash; titanium dioxide pigment; wollastonite; zeolites; and zirconium) or less than 24% import reliant (beryllium; cement; diamond, industrial stones; feldspar; gypsum; iron and steel slag; lime; nitrogen (fixed)-ammonia; phosphite rock; sand and gravel, construction; stone, crushed; sulfur; and talc and pyrophyllite). For some mineral commodities (hafnium; mercury; quartz crystal, industrial; and thallium), not enough information is available to calculate the exact percentage of import reliance.

<sup>2</sup>In descending order of import share.

<sup>3</sup>Data include lanthanides.

## IMPROVING BATTERY INDUSTRY CAPACITY & RESILIENCE

6

Material Security

**Establish a project to investigate Australia's Risk and Reliance Profile with regard to essential metals similar to that conducted by the USGS titled "Risk & Reliance: The U.S. Economy and Mineral Resources"**

➔ **This will demonstrate the value and importance of investing in Australia's battery collection and recycling sectors**

# Battery industry capacity & resilience

7

Efficiency & enforcement

## KEY FACTORS

### Lack of efficiency

- **Import permit process & costs**
- **Export permit process**
  - High cost / short duration
  - Industry concern that the approval process does not assess emerging processing options
- **Department of Environment & Energy budget cuts and corresponding revolving door of staffing**

### Lack of enforcement

- **Suspected non-compliance in industry**
- **International export obligations**
  - Breaches to the Basel Convention
  - Stockpiling
  - Illegal export impacting recovery rates



## IMPROVING BATTERY INDUSTRY CAPACITY & RESILIENCE

7

Efficiency &  
enforcement

- ➔ **Review of import/export permitting process**
  - Review of permit fees (cost recovery & enforcement)
  - ABRI could be a helpful resource
- ➔ **Improve enforcement of the Hazardous Waste Act**
  - Communication of enforcement contacts
  - Response to reporting of suspected non-conformance
- ➔ **Review & improvement of the Product Stewardship Act**
  - Free rider action
- ➔ **Require government investments (e.g. Arena) to specify that their projects have an end of life plan for batteries**



Thank you for your interest in  
this important policy  
initiative

[secretariat@batteryrecycling.org.au](mailto:secretariat@batteryrecycling.org.au)

[www.batteryrecycling.org.au](http://www.batteryrecycling.org.au)

