



**RESOURCE**  
INNOVATIVE BATTERY RECYCLING SOLUTIONS

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To Whom It May Concern:

I write this submission on behalf of ReSourc Pty Ltd. ReSourc commenced operations in February 2017 with our factory located in Melbourne. It is Australia's first and only Alkaline and Zinc Carbon battery recycler. Our process, designed in Australia, is one of 3 plants in the world that is able to take Alkaline and Zinc Carbon batteries and convert them into safe fertiliser for Australian farms. With recovery and reuse rates at over 85% from Alkaline and Zinc Carbon batteries, our process is leading the way globally for environmental outcomes.

After only 8 months in operation we are already handling over 2,000tons of Alkaline and Zinc Carbon batteries. Sadly, the majority of these batteries are imported from overseas due to the fact that our current government environmental policies in relation to batteries, simply do not support diversion from landfill and recycling.

The Waste Management Policy (E-Waste) 2018 is, however, a great opportunity for Victoria to lead the way in Australia, and finally ban all batteries from landfill. In reading the latest draft I was very disappointed to learn that it only includes rechargeable batteries under 'specified e-waste'. The proposal to include only 'rechargeable batteries' is an extremely precarious line for this policy to take, for several reasons, which I will outline below:

## 1. INCREASED RISK OF RECHARGEABLES TO LANDFILL

According to a 2014 report commissioned by the National Environment Protection Council, rechargeable handheld batteries (excluding lead acid) made up only 27% of the market. Single use batteries, being Alkaline and Zinc Carbon, made up the remaining 73% and were forecasted to remain, by far, the largest type of battery sold in Australia beyond 2020. With no new types of single use batteries in development, global forecasts show single use batteries remaining the largest portion of the handheld market for at least the next 30 years.

The technology to allow efficient and accurate sorting of single use and rechargeable batteries in a large collection of mixed hand-held batteries is limited. Currently the only way to sort them is by using a trained hand sorter (which is slow and inefficient) or a combination of an automated sorting line and hand sorting. I have personally seen, in recent visits to Europe, it can even be difficult at times for professional battery collectors/sorters to identify one from the other.

This identifiability issue then leads to many other problems. The first issue is the cost involved in sorting the batteries. Because it cannot be done accurately or quickly without the right investment, there is a requirement to charge for accurate sorting. Those people or companies wanting to avoid this cost can then simply mix their single use and rechargeable batteries and dump them to landfill with almost 100% certainty they will not be caught, as landfill operators will seldom identify rechargeable batteries from single use batteries.

Furthermore, with the increasing volume of Li-Ion batteries entering the market, many in a very similar shape to single use batteries (i.e. 18650 and 23650 Li-Ion batteries that Tesla produce), the ease and likelihood of these batteries being mixed in with single use batteries, either deliberately or inadvertently, will increase dramatically.

Secondly, not banning all batteries from landfill is a huge safety risk and goes directly against the second objective of the policy. As the 2017 ICBR (International Congress for Battery Recycling) showed in September this year, the risk of combustion of Li-Ion batteries is huge, and thermal runaway is an increasing threat to the waste industry. Knowing that we cannot accurately sort rechargeable and single use batteries without professional sorting operators, we can be certain that rechargeable batteries will always be mixed in with single use batteries.

So, by not segregating ALL batteries, and ensuring they are safely sorted and diverted from landfill, this policy is essentially accepting that we will see significantly increased volumes of highly volatile and dangerous Li-Ion mixed in with our waste streams and landfills. This increases fire risk and heavy metal pollution in our landfills and makes the job of running landfills significantly costlier and more dangerous.

To simply suggest banning rechargeable batteries will prevent this problem highlights a disconnect between understanding the type/size/shape of batteries that are coming into our waste streams and the ability for them to be lost and/or hidden in with single use batteries.

## 2. LOSS OF VALUABLE MINERALS & INCREASED RISK OF HEAVY METALS IN LANDFILL

Both rechargeable and single use batteries contain valuable metals for reuse and harmful heavy metals to the environment. Single use batteries contain mercury, cadmium, copper, etc. whilst rechargeable batteries contain cadmium, nickel, mercury, etc. These are elements everyone agrees should not be in our landfills.

Whilst banning rechargeable batteries can help this issue and rechargeable batteries do contain larger volumes of heavy metals, this ignores the volume of the problem. Single use batteries exist in volumes 5-10 times that of rechargeable batteries so whilst heavy metal levels are significantly lower, the potential volume of heavy metals entering our landfills is on the same scale.

Lastly, when we fail to recycle the single use batteries we lose out on large volumes of valuable minerals. The third objective of the policy is to “maximise the recovery of materials from e-waste” – the absence of single use batteries from the policy directly contradicts this objective and ensures the majority of Australia’s handheld batteries are lost to landfill.

Technology exists, and is operating in Australia today, that allows the recovery and reuse of more than 85% of a single use battery. Zinc, Manganese, and Potassium, etc all exist in single use batteries and are valuable minerals to our farming industry. With the processing that exists in Melbourne, these minerals can be converted into cost effective fertilisers for Australian farmers who have zinc and manganese deficient soil along with clean steel for our local steel mills.

By allowing batteries, of any type, to go to landfill you not only continue to allow unacceptable heavy metals to enter our landfills, something which has been banned in the EU for more than 25 years due to the known dangers, but you also ignore the significant benefits that can be derived from safe recycling.

### 3. PUBLIC CONFUSION

Another lesson learned from the recent ICBR conference in Europe, and other visits to various battery collectors outside Australia, was that the general public struggles to identify batteries and/or simply does not care enough to identify one type from another.

The largest battery collector in Belgium has been running trials, separating power tool and camera batteries from 'standard' size (AA, AAA, C, D, 9V, etc) batteries at many of their collection points. They place two clearly labelled buckets next to each other with diagrams and text describing which batteries go into which bucket. Although they have seen some separation, the fact is, they still get batteries mixed across both buckets.

By communicating to the public and businesses that no batteries can go to landfill, you create absolute clarity. There is no confusion, no uncertainty, no need for training or public awareness campaign costs, and the sorting (and then recycling) is left to professional organisations where material recovery and reuse is maximised.

### SUMMARY

The conversation about banning batteries, and all wastes listed in the Waste Management Policy (E-Waste) 2018, is long overdue. Europe has lead the way in recognising not only the dangers related to allowing batteries to go to landfill but also the loss of resources that goes along with this.

We have an opportunity to sent a standard for the nation that puts an end to this waste and shifts the focus to a more sustainable, environmentally conscience future.

If there is any further opportunity to be involved in the discussion or there are questions that come out of this submission please contact me at any time on the below details.



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