MATERIAL FOCUS

Research

Hidden batteries: new collection methods to reduce fires

August 2020

Executive summary

Lithium ion batteries represent a significant risk to the Small Mixed Waste Electronic and Electrical Equipment (SMW) collection and processing infrastructure. Lithium ion batteries (LIBs) can cause devastating fires if they become damaged and combust. The result can be damage to facilities and potential harm to people (employees or the public).

In an attempt to address the issue of batteries in SMW, a consortium representing the collection, sorting and recycling sectors in the UK was established. Through this consortium the Safer WEEE project was carried out.

The aim of the SAFeR WEEE (Separating batteries to Address Fire Risks in WEEE) project was to trial a protocol that requires householders to segregate LIBs from SMW at Household Waste Recycling Centres (HWRCs) into three streams:

- SMW items not containing batteries;
- SMW items where batteries cannot be removed; and
- Batteries (removed from SMW items).

The objective was, via a number of interventions such as practical trials, staff training, and communications, to:

- Determine the effectiveness of an alternative collection protocol for SMW;
- Reduce risks by segregating batteries from WEEE items at HWRCs; and
- Allow more value to be recovered from the WEEE streams and further compliance with the WEEE protocol.

The planned interventions included:

1. Higher visibility for battery recycling on the HWRCs;
2. Co-locating all the containers (SMW skip, WEEE with non-removable batteries and batteries on their own) in one place;
3. Interception of visitors with WEEE/batteries and interaction with site staff; and
4. Communications highlighting the importance of separating batteries and explaining how to separate their SMW

However, due to the operational pressures of running the sites efficiently, there was limited implementation of Intervention 3 (intercepting visitors). This meant the project was heavily reliant on onsite communications and social media activity by project partners to effect any change on site users.

Three HWRCS in the Merseyside area where chosen for the study:

- Huyton;
- Old Swan; and
- South Sefton.

Communication material was developed to be used at the three HWRCs between June and November 2019. The campaign used the slogan “Be Battery Savvy” and focused on the importance

of removing batteries and battery containing devices to help prevent fires. Figure 1 shows the logo and the banner used in communication material.

Figure 1 Communication logos

The communication materials along with a third container to collect “battery containing devices” were deployed in the three HWRCS. This bin is shown in Figure 2

Figure 2 Battery containing device container

The trial was launched on the 10th June 2019 in the three HWRCs. After 3 months a review of the collections was carried out to understand how the public had interacted with the new collection method.

From this 3 month review it was clear that the public were not using the collections in the desired manner. The South Sefton container for battery containing devices was full of batteries, mostly lithium ion. This shows that the public understood the new bin had a purpose, but they were not using it correctly.

In both Huyton and Old Swan there was a more random assortment of devices. Many of the devices were battery powered, some with the batteries removed and others not. The composition of the material suggested the public understood there was a difference between the new collection container and the normal SMW skip, but they were not using it correctly.

It was decided to change the communication to focus only on removing batteries and the container for battery containing devices was removed. The collection was allowed to run for another month after the change in communications. Figure 3 shows the updated communication poster.

Figure 3 Updated communication

After a month of focussing on communicating the need to remove batteries, the battery bins were collected from the HWRCs and the contents analysed.

There was limited historic data on the collection of batteries from the three sites, so understanding the impact of the various interventions is challenging. The data obtained suggests that the interventions and communication had little effect on the quantity of batteries collected. Without more historic data it was not possible to ascertain if there was a change in. Obtaining quantitative data in this project was challenging, as tracking and quantifying relatively small quantities of a small product like batteries in a waste stream such as SMW is extremely difficult.

The interventions carried out in the project were designed to be low cost methods of trying to reduce the number of batteries disposed of in the Small Mixed WEEE. The communication campaign alone was not successful in doing this, however some valuable lessons have been gained from the project.

The analysis of the material suggests that site users were unable to understand the concept of separating "battery containing devices". The HWRC is a busy environment and site users appear unwilling to spend any more time then is absolutely necessary to decide what to do with their materials. Recent research suggests that when in a rush people spend less than two seconds at a bin deciding what to do[1]. Whilst an HWRC is slightly different to an 'on-the-go' bin, the desire to be as quick as possible is probably very similar. Thus the 'window of opportunity' to inform and persuade members of the public to do something different or that requires extra effort (intellectually, physically or in terms of time) is very small, as are chances of them actually doing it.

Furthermore, the limited data obtained on the quantity and composition of the batteries collected during the trial suggests there was little impact from the on-site communications. The method applied in this project was a "low cost" intervention, primarily using static signage. In order to gain very robust data, a longer duration of trial would be needed to observe significant behavioural change and to ensure any differences were not due to "seasonal variation". Such a trail would take at least 12 months, ideally 24.

However, from observing usage of the facilities and considering ways in which to reduce the barriers there are several interventions which could potentially increase the likelihood that householders will remove and recycle batteries separately. The recommendations from this project are therefore:

- Increased clear communications by product manufacturers and retailers, waste collectors and fire and rescue services across the UK highlighting the dangers posed by batteries and promoting the separation of batteries for safe recycling (especially Li-ion);
    - The aim should be to prime people so they separate their batteries from their WEEE products before they visit the HWRC;
- Prioritising the separation of batteries from SMW by collectors, especially on HWRCs by:
    - Co-locating SMW and battery containers so it is easier for the public to recycle their batteries at the same time as dealing with their WEEE;
    - Repositioning SMW and battery containers to a more central location where operatives stand more chance of intercepting and 'policing' users;
    - Additional formal training on WEEE and batteries for HWRCs operatives (including 'meet and greet' staff) so they understand the issues and prioritise the proper separation of batteries from SMW; and

[1] Leeds By Example impact report 2019, Dec 2, 2019

- Clear, bold instructional signage next to co-located SMW/battery containers, highlighting the danger from fires and telling people to separate their batteries and recycle them separately;

Encouraging householders to remove batteries from devices before disposing of in the Small Mixed WEEE skip is still a high priority for the stakeholders. This project has given a valuable insight into how the public interact with WEEE collections, and the level to which signage alone can have an impact.

Contents

1 Introduction

Lithium Ion Batteries (LIBs) are used in all kinds of portable electronic products from laptops and mobile phones to power tools and toys. They are also volatile in nature and can, under certain conditions such as when they are damaged, ignite causing intense fires. The Environmental Services Association (ESA), the trade body representing the UK's resource and waste management industry, reports that its members think nearly 130 fires were caused by LIBs in 2017-18 - a 5% increase on the previous year. Such fires, as well as being dangerous to life and the environment, can cause large scale damage to recycling facilities and equipment as well as huge financial losses for WEEE collectors and recyclers.

With this as a backdrop, Axion Recycling Ltd (Axion) developed a technical research project proposal which was submitted to Material Focus in June 2019 to develop an effective, safe and commercially viable collection protocol for segregating (LIBs) from small mixed WEEE (SMW) at Household Waste Recycling Centres (HWRCs).

1.1 Aims and objectives

The aim of the SAFeR WEEE project was to trial an effective, protocol that requires householders to segregate LIBs from SMW at Household Waste Recycling Centres (HWRCs) into three streams:

- WEEE items not containing batteries;
- WEEE items where batteries cannot be removed; and
- Batteries (removed from WEEE items).

The objective was, via a number of interventions such as practical trials, staff training, and communication campaigns, to:

- Determine the effectiveness of an alternative collection protocol for SMW
- Reduce risks by segregating batteries from WEEE items at the HWRCs
- Allow more value to be recovered from the WEEE streams and further compliance with the WEEE protocol.

The ultimate vision is that, providing the project is a success, the alternative collection protocol will be adopted across the country.

1.2 Project partners

Axion operates innovative processing solutions to recover value from waste resources and provides circular economy consultancy services. For this project it worked jointly with Eunomia Research and Consulting Ltd (Eunomia), an independent consultancy dedicated to achieving better environmental and commercial outcomes for clients across the public, private and voluntary/NGO sectors.

Financial supported by Material Focus, Axion assembled a group of interested stakeholders involved in WEEE collection and processing from around Merseyside to take part in the project. They included:

- **Merseyside Fire & Rescue Service** (MFRS) is the statutory fire and rescue service covering Merseyside and provided advice on safe storage and treatment of batteries and supported the project with social media communications during the trial.
- **Merseyside Recycling and Waste Authority** (MRWA) is responsible for the disposal of municipal waste on Merseyside and works with all the local authorities on Merseyside – Knowsley, Liverpool, Sefton, St Helens and Wirral. MRWA facilitated the use of three of its HWRCs for the project and provided supporting social media communications.
- **S Norton** is the UK's largest independent metal recycler and has significant expertise in WEEE processing. S Norton provided space at its sites for storage and analysis of SMW and batteries.
- **Veolia UK** is the UK leader in environmental solutions, providing a comprehensive range of waste, water and energy management services. Veolia Merseyside & Halton Ltd operates facilities, on behalf of MRWA, to treat the waste and recycling from homes across the region. Veolia is supporting by accommodating the trial at HWRCs and delivering on site to the public.
- **Viridor** is a leading waste management company and manages a network of household waste recycling centres (HWRCs) in partnership with local authorities across the UK and is provided technical and logistical support to the project.
- **Wastecare** offers total waste management solutions and nationwide collection services and has expertise in collection and disposal of WEEE and batteries. Wastecare supported the project by providing practical expertise in the collection, storage, and treatment of SMW and batteries.

- **Material Focus** manages the distribution of money collected through the UK WEEE Compliance Fee, spending on on a range of activities, including technical research, communications, behaviour change activities and local projects.

2 Methodology

Figure 4 shows the overall project methodology.

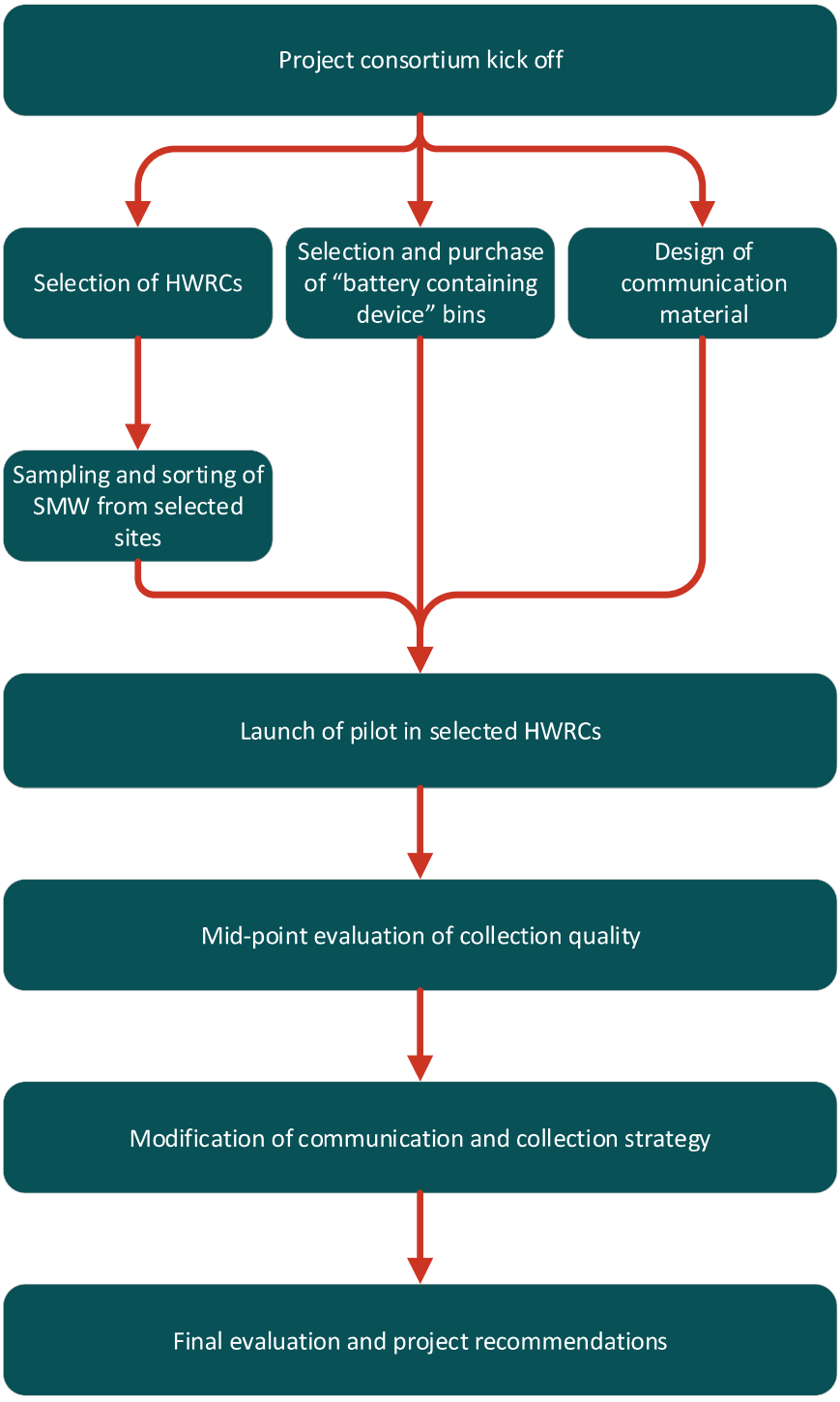

Figure 4 Project methodology

The project ran from April to December 2019. It was originally scheduled to run from April – October with collections running from June – September but was extended following a mid-project review.

2.1 Project inception

A project inception meeting was held between the consortium members in April 2019. The members and their role in the project are defined in Table 1.

Table 1 Project consortium and roles

Axion	Managing sampling and sorting activities.
Eunomia	Project management and management of communication activities.
Merseyside Fire and Rescue Service	Supporting the communication activities
Merseyside Waste and Recycling Authority (MWRA)	Allow the trial to proceed at three of its HWRCs. Supporting the communication activities and implementation of the pilot.
S. Norton	Small Mixed WEEE processor and host site for sorting trials.
Veolia	Operator of the Household Waste Recycling centres (HWRCs) in Merseyside for MWRA.
Viridor	Small Mixed WEEE processor – ultimate destination for SMW collected at HWRCs across Merseyside.
WasteCare	Battery sorting and recycling company.

The inception meeting enabled a discussion to take place with all stakeholders to shape the direction of the pilot trial. In the kick off meeting and subsequent meetings it was possible to design, review and revise the overall project.

Following the inception meeting four main tasks were carried out:

1. Confirmation on the collection trial format;
2. Selection of three HWRCs at which to implement the trial;
3. Selection of the container to collect the “battery containing devices”; and
4. Design of the communication material.

2.1.1 Collection trial format

It was confirmed by the partners that the initial collection format would comprise:

- Small mixed WEEE (SMW) – using existing containers
- Batteries – using existing containers

- SMW containing batteries – new container

2.1.2 HWRC selection

The selection of the HWRCs was somewhat limited as only some sites could accommodate the new third collection container for SMW containing batteries. This also influenced what type/size of container could be placed on site. Sites were also selected to give some variation in demography although this was not a primary aim.

The three sites selected were:

- South Sefton Household Waste Recycling Centre, Irlam Road, Bootle L20 4AE
- Old Swan Household Waste Recycling Centre, Cheadle Avenue, Liverpool L13 3AF
- Huyton Household Waste Recycling Centre, Wilson Road, Huyton L36 6AD

Figure 5 shows the location of the three HWRCs.

Figure 5 Location of HWRCs

2.1.3 Containers

It was decided that a 770 litre drop front wheeled bins should be used for the collection of the "battery containing devices". This was to meet the space requirements at the site and enable the easy emptying of the collected material. Figure 6 shows the type of bin used.

Figure 6 770 litre drop front bin

The “battery containing devices” collected would be sent to Viridor along with the Small Mixed WEEE. This means that on receiving the material, Viridor would be aware there are batteries in the WEEE and can treat it accordingly to reduce any risk.

The decision was also made to co-locate the “battery” bin, SMW skip and battery containing devices container to make it easier for people to use.

2.1.4 Communications

The communication material was designed in collaboration with the partners. This is covered in detail in Section 4.

2.2 Next steps

Once the sites had been selected an initial sorting trial was carried out to characterise the Small Mixed WEEE at each site. This was a high level analysis of approximately 2 tonnes of material from each site. The aim of this was to understand what kind of battery containing devices were already disposed of in the SMW skip, and how many of these devices there are.

Once the sampling was completed the pilot was launched in the three sites in June 2019. The site teams were briefed on the trial and the relevant communication media installed (see Section 5 for more information). The pilot was allowed to run for 4 months with periodic monitoring by the project consortium.

After three months, analysis of the “battery containing device” container was carried out at the three sites. This was to determine how many devices have been collected and whether the users of the HWRCs had understood the purpose of the container. For further details see Section 6.

Following this analysis it was necessary to modify the communication strategy. The trial was then allowed to run for another month (see Section 7). After this time a final analysis (Section 8) was carried out and conclusions drawn on the outcome of the trial (Section 10).

3 Initial Small Mixed WEEE (SMW) analysis

During w/c 10th June 2019 a sample of SMW was taken from three Household Waste Recycling Centres (HWRCs) in Merseyside. The sites were:

- Huyton (10/6/19)
- Old Swan (12/6/19)
- South Sefton (14/6/19)

The SMW is collected in a large roll-on roll-off (ro-ro) skip at the HWRC. The ro-ro skip was taken from the HWRC and delivered to S. Norton Liverpool. Once delivered the material was tipped into a pile.

Axion staff then sorted the material, counting how many items fell into the categories shown in Table 2. Item number rather than weight was taken as this relates more directly to the aims of the trial.

Table 2 Example blank data collection table

	Mains powered	Battery powered with battery in	Battery powered with battery removed	Non-removable battery
Microwave				
LDA				
SDA				
IT				
Consumer				
Tools				
Other				
Garden				
Display				

The accuracy of the different WEEE categories is not 100% but does give an indication as to the composition.

Approximately 2 tonnes from each site was sorted.

Figure 7 shows a tipped load of SMW at the S. Norton yard.

Figure 7 Tipped load of SMW

The below graphs show the composition of the WEEE sampled from each site. The data is based on number of items not item weight. Table 3 shows the number of items sorted for each site.

Table 3 Number of items sorted

Site	Number of items analysed
Huyton	438
Old Swan	332
South Sefton	362

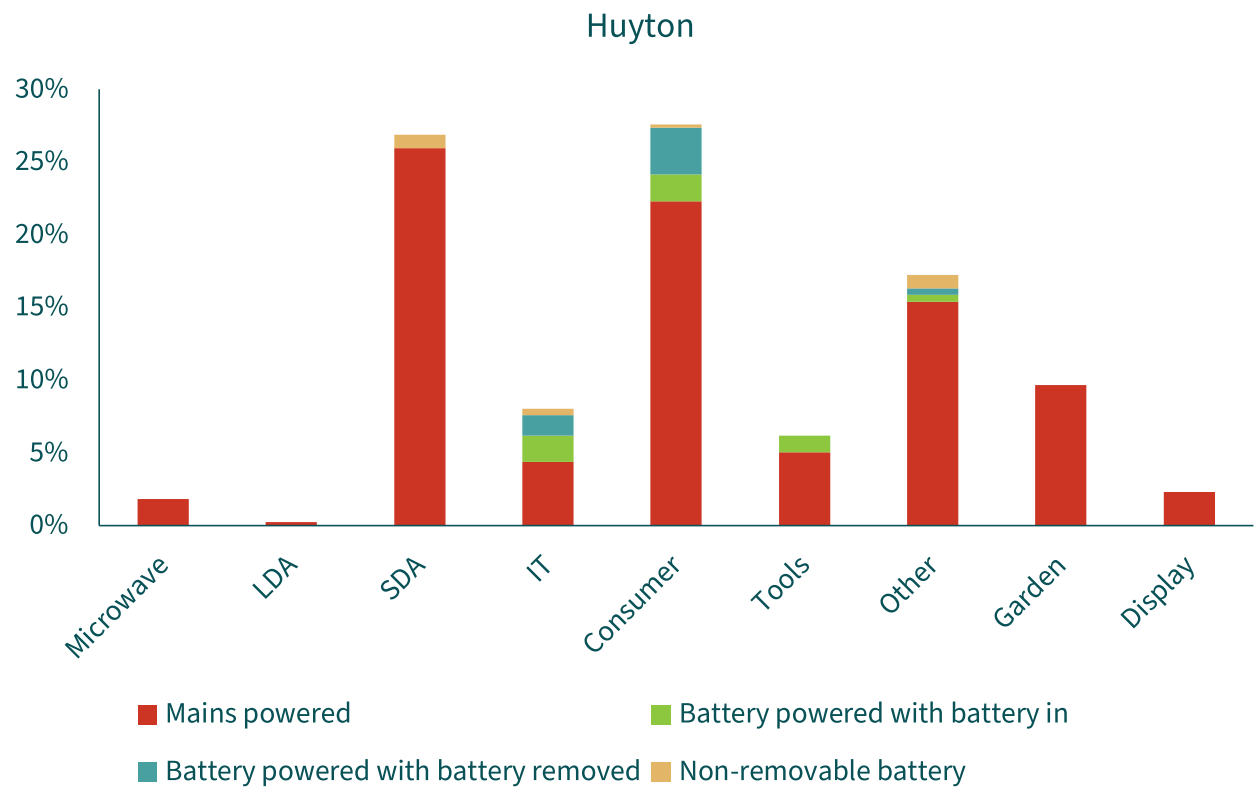

Figure 8 Huyton composition

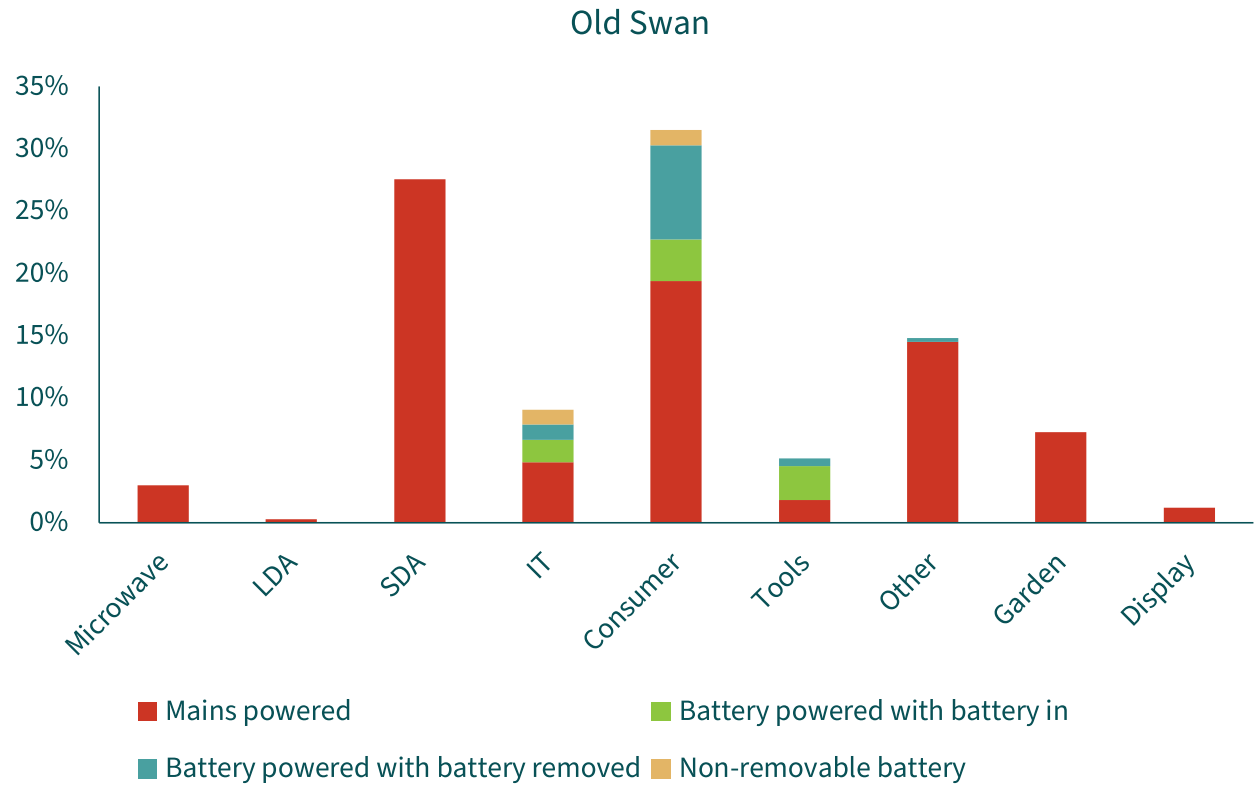

Figure 9 Old Swan composition

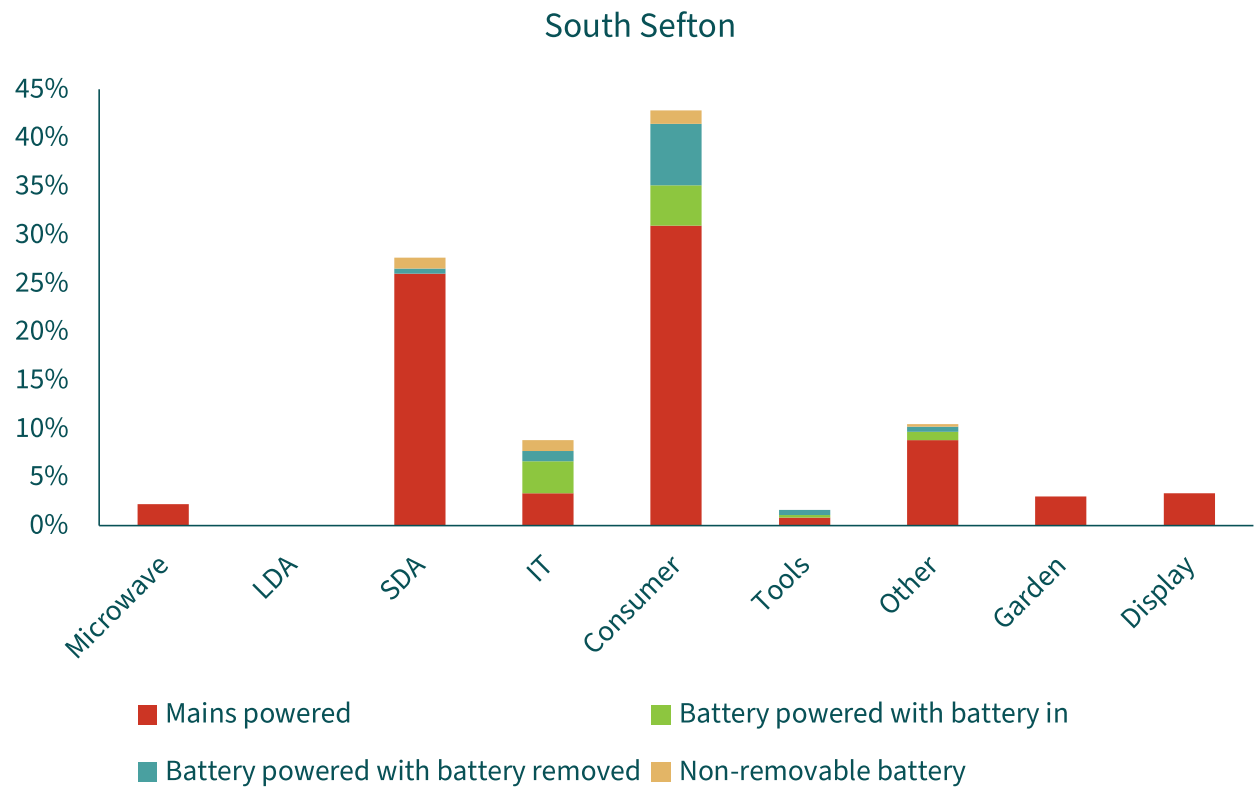

Figure 10 South Sefton composition

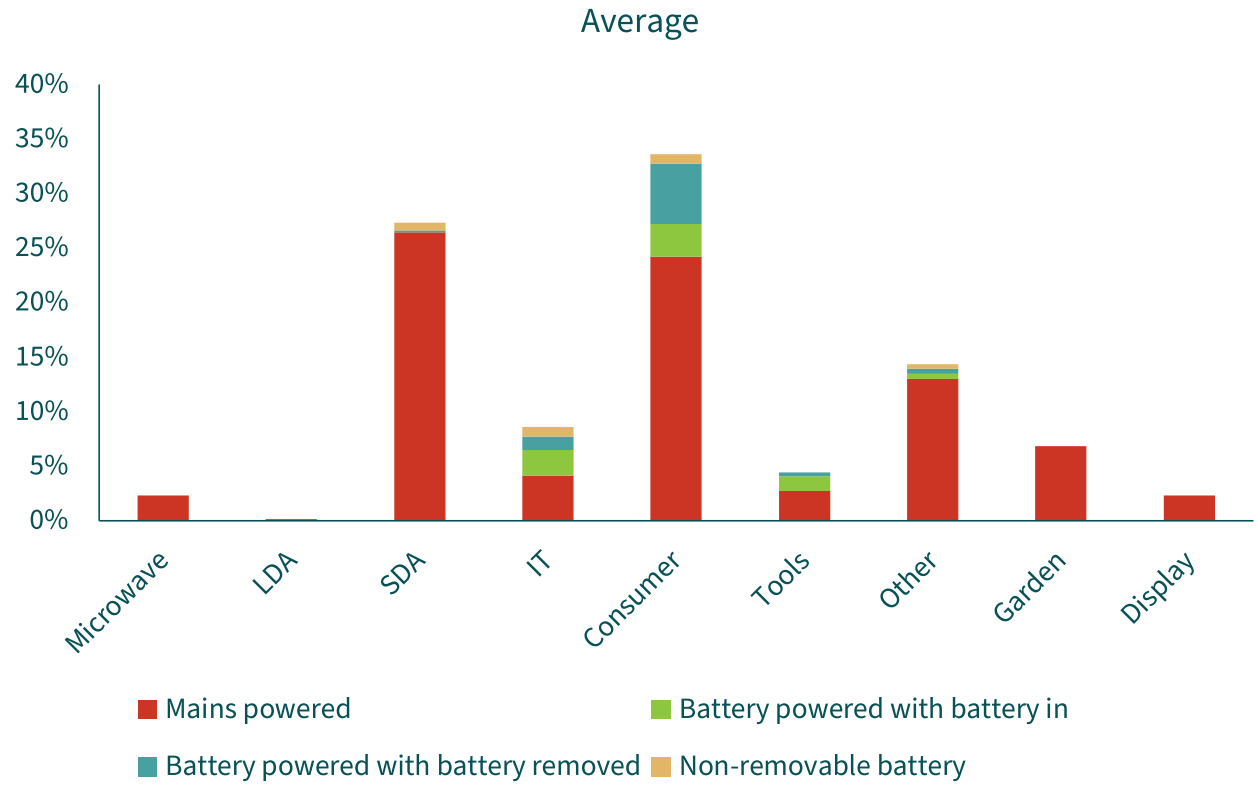

Figure 11 totalled composition

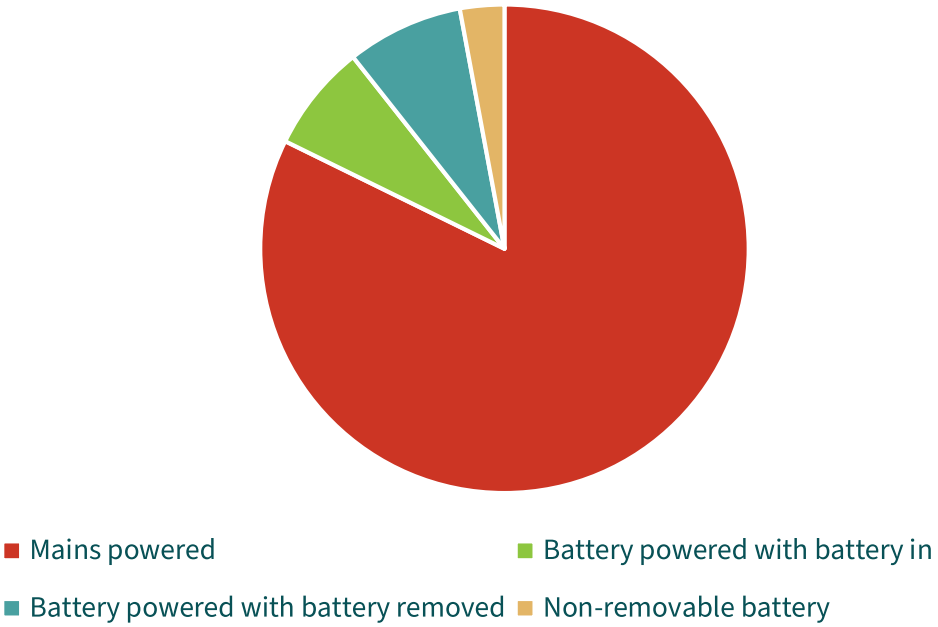

Figure 12 All WEEE from all sites

The composition was similar between the three sites with SDAs and consumer electronics making up the majority. Within the SDAs it was primarily items like vacuum cleaners, toasters and kettles. The consumer fraction was dominated by speakers/stereos and set top boxes.

The data shows that it was the IT equipment, consumer electronics and tools where the majority of battery containing devices were found.

Several of the items in the “consumer” category with batteries were remote controls powered by AA or AAA batteries, as shown in Figure 13.

Figure 13 Remote with batteries

The category with the most relevance for the SAFeR WEEE project is IT and telecommunication devices. In this category, several laptops, mobile phones and tablets were found in the SMW. The laptops were found with and without batteries, although for the ones without batteries these may have come off after disposal by the householder.

The images below show some of the items with lithium ion batteries in found in the SMW.

Figure 14 Laptop with battery

Figure 15 Tablet with integrated battery

Figure 16 Mobile phones with removable batteries

Power tools and cordless vacuums were the other two types of notable WEEE that had batteries.

Figure 17 Power tool with battery

Figure 18 SDA with integrated battery

Very few devices (3%) had non-removable batteries. For the devices where the battery can be removed, over 50% have been. Some of these may have been liberated after collection and would still be present loose in the load. However, because of the difficulty in sorting smaller items these may not have been identified

The sorting shows there is a need to extract more of the battery containing devices and also to encourage householders to remove batteries where possible. Presently the householder may have no option for disposing of battery containing devices other than in the SMW skip, and they may not realise the importance of removing batteries when this is possible.

4 Communications campaign

A communications programme was developed based on four engagement points:

- Awareness raising communications targeting the public before they visit the HWRC
- Awareness raising signage at HWRCs targeting all site visitors
- Instructional and awareness raising signage on the banks at the HWRCs targeting users
- Interventions and one-to-one interaction with HWRC site operatives

4.1 Communications planning

4.1.1 Communications plan

A communications plan was developed as public engagement was a key element of the project. It detailed a number of areas and was agreed by the project partners. The main elements are covered in this section. The communication plan included:

- Introduction and outline of the project
- Target audience
- Branding and messaging
- Communications activities
- Monitoring & evaluation
- Timeline

A copy can be found in Appendix 1.

4.1.1 Media protocol

One of the first tasks was to develop a media protocol to ensure that the information contained in all communication with stakeholders is consistent, accurate, fair, timely and acknowledges the project partners where relevant.

The protocol established a chain of command and outlined the necessary review processes for all external communications, as well as establishing correct procedure for interactions with the media. It covered:

- The chain of command (for the project)
- The review and approval process for external communications including
  - Media relations
  - Press releases
  - Social media
  - Other communications

A copy of the media protocol can be found in Appendix 2.

4.2 Target audience

Broadly the target audience was identified as all users of SMW battery powered products living within the area covered by MRWA and 'Recycle for Merseyside and Halton' and specifically within the catchment areas of the three trial HWRCs. However, within this there are two distinct groups:

- Older people (aged 35+), longer-term residents living in Merseyside (more likely to recycle in general and recycle SMW. Likely to routinely use HWRCs); and
- Younger people (aged 18 – 34) living in Merseyside (likely to be higher 'consumers' of battery operated SMW products but less likely to recycle in general and less likely to recycle SMW).

4.3 Branding and messaging

A number of names/messages were suggested by project partners. These used a combination of familiar phrases associated with electronic products as well as highlights the desirable action i.e. removing batteries from products.

Examples of the initial suggestions included:

- 'Batteries can Burn'
- 'Batteries Not Included'
- 'Be Battery Aware'

These ideas were developed into the final branding and messaging used in the campaign.

The final campaign name was 'BeBatterySavvy' which was designed to be contemporary and appeal to the idea of being 'in the know' or 'savvy' when it came to using (and disposing of) batteries. This was developed into a campaign logo which uses bright fresh colours and the pink from the Recycle Now iconography for the electronic material stream as they are used at all the HWRCs across Merseyside:

BeBatterySavvy

Figure 19: BeBatterySavvy logo

The main messages were encapsulated into the following which raise awareness of the issue and provide a clear call to action:

Figure 20: BeBatterySavvy messaging

This branding and messaging was used throughout the campaign on a range of campaign materials.

4.4 Communication activities

This section details the actual communication activities undertaken for the project. These were:

- Communications at HWRCs - targeting all site visitors and specific SMW/battery bank users
- Proactive communications - targeting the public before they visit HWRCs
- Behaviour change interventions
  - Recycling bank positioning
  - Interactions with HWRC site operatives

4.4.1 Communications at HWRCs

4.4.1.1 Site signage

To raise awareness amongst HWRCs users of the need to recycle batteries separately a number of communication routes were used on each of the sites.

Figure 21: Entrance signage

BeBatterySavvy campaign signage was produced and affixed in prominent locations at each HWRC. Two were located at the entrances and a third (Old Swan) was located on boundary fencing near the SMW bank in a position where virtually every visitor would drive past on their way out.

4.4.1.2 Recycling container signage

Bright informational signage was produced for two of the containers use for the trials:

- Battery banks
- Wheeled container for SMW containing batteries

No signage was produced for the main SMW skip due to two reasons:

- All the sites were split level sites so the SMW skips themselves we not that visible to visitors and could only be seen from above when depositing materials in them.

- The existing signage was suitable as no changes were being made to what the SMW skips collected

Figure 22 Recycling container signage at Huyton HWRC

4.4.1.3 Battery banks

Wraparound sleeves were designed for the 120 litre barrels used to store batteries and the containers at each HWRC.

The image on the left shows a closeup of the container at Huyton HWRC and the one on the right depicts two battery banks at South Sefton HWRC along with the existing signage for household batteries.

Figure 23: Battery banks at Huyton (left) and South Sefton (right)

4.4.1.4 SMW containing batteries

The 750 litre wheeled container for SMW containing batteries (i.e. products with integral or difficult to remove batteries) also displayed prominent signage as shown in the image below.

Figure 24: Signage on container for SMW containing batteries

4.4.2 Behaviour change interventions

Three distinct behaviour change interventions were attempted:

- Repositioning recycling banks
- Information board
- Interactions with site operatives

4.4.2.1 Repositioning recycling banks

All the containers were placed next to each other as shown in the earlier photograph from Huyton HWRC (Figure 22) and Figure 25 below from South Sefton HWRC.

Figure 25: Repositioned containers at South Sefton HWRC

Battery banks are 'traditionally' located in other parts the HWRCs where other minor waste streams are collected e.g. textiles, books, engine oil, paint etc. and are, depending on the site layout, not immediately obvious.

The main reason for moving the battery banks next to the SMW skip was to make it as convenient as possible for people to separate and recycle their batteries.

4.4.2.2 Information board

In order to help people decide what to do with their SMW and batteries (should they separate their batteries and where to put them) an information panel was produced and positioned alongside the recycling banks. This had a decision-making flow diagram designed to help people decide what to do if their SMW product had batteries. The information panel is shown below along with it in-situ.

Figure 26: Information board graphic panel (left) and in situ (right)

4.4.2.3 Interactions with site operatives

The final planned intervention concerned interactions between the public and HWRC site operatives. The potential interactions included the 'meet and greet' staff on the entrance and operatives working on the site itself. A number of branded 'BeBatterySavvy' tabards were provided for staff at each site to raise awareness of the campaign as shown in the image below.

Figure 27: Site operative branded hi-viz – meet and greet staff (left) and site staff (right)

The aim of the initiative with site staff was twofold:

- HWRC staff to be proactive, intercepting site visitors or asking whether they had SMW or batteries to recycle
- Interact with visitors and be able to answer basic questions about battery recycling when asked

HWRC staff were provided with basic FAQs so they could answer questions. A copy of the FAQs can be found in Appendix 3.

4.4.3 Proactive communications

4.4.3.1 *Launch photocall*

A launch photocall event was held on June 10th 2019 with all the main project partners in attendance (Figure 28).

Figure 28:Launch photocall (l-r): Aaron Kenwright (Veolia), Rick Smales (MRWA), David Hobson (Axion), Jeff Sears (Veolia), Jon Tomkins (S Norton), Cllr Tony Concepcion (MRWA), Joe Cunliffe (Merseyside Fire & Rescue Service) Carl Beer (MRWA), Gareth Morton (Eunomia), Tom Liddell (Viridor), Laura Rattigan (Viridor) and Mike Forrest (S Norton).

Results

A press release was issued after the event with photographs which was picked up by the following:

- Q Local – local news website – circulation 5697 https://www.qlocal.co.uk/birkenhead/news_list/Recycle_batteries_safely_to_prevent_fires__new_campaign-55038784.htm
- Lets Recycle – online trade and national news – circulation 9039 https://www.letsrecycle.com/news/latest-news/merseyside-bebatterysavvy-hwrc-campaign-launches/
- Waste Management World - online trade and national news – circulation 10,051 https://waste-management-world.com/a/firefighters-recycling-industry-team-up-to-cut-battery-fires-in-merseyside

4.4.3.2 *Project partner websites*

The campaign was featured on the MRWA, MFRS and Veolia websites.

MRWA:

The campaign had a banner on the MRWA homepage throughout the period of the trials, a separate campaign page as well as being featured on the news pages.

- https://www.merseysidewda.gov.uk/

Figure 29: MRWA homepage (top left) and BeBatterySavvy page (top right) and MRWA newspage (bottom left)

MFRS:

MFRS carried details on its newspages:

- https://www.merseyfire.gov.uk/aspx/pages/LatestNews/NewsDetail.aspx?id=2071

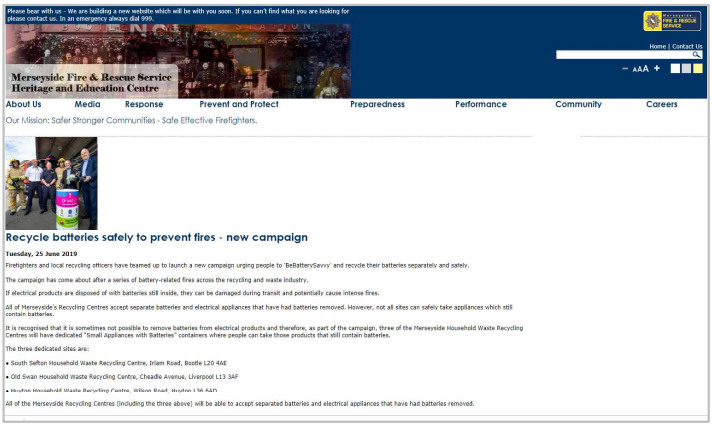

Figure 30: MFRS newspage

Veolia

Veiolia also carried information on its website:

- https://www.veolia.co.uk/merseyside-and-halton/about-us/news/be-battery-savvy-new-campaign-launched

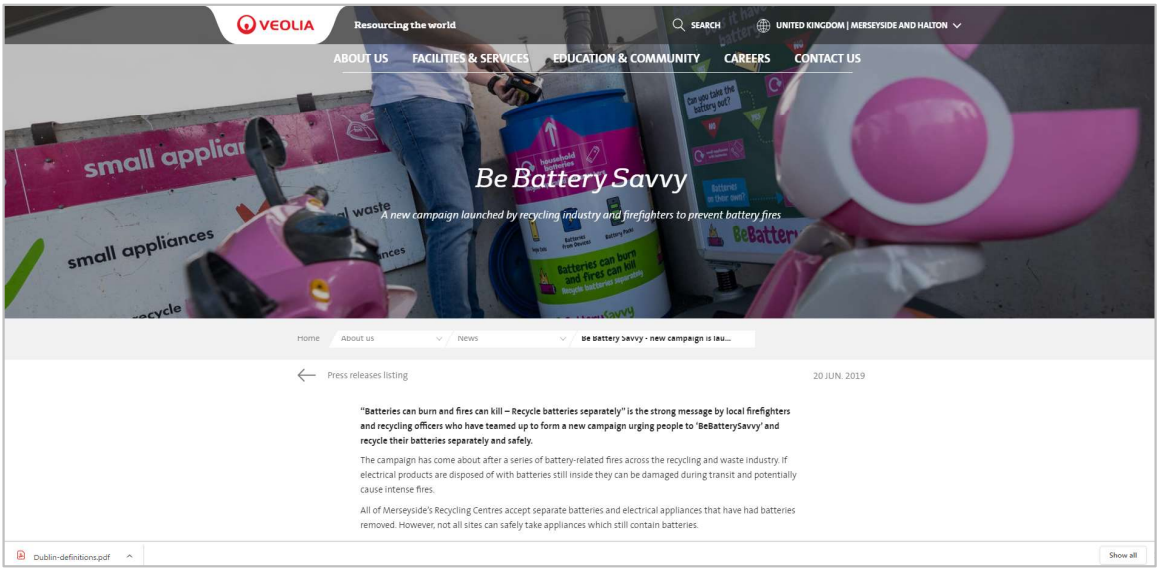

Figure 31: Weolia webpage

Results

The MRWA website had 270 Page Views of the SAFeR WEEE campaign page

4.4.3.3 Social media campaign

A social media campaign was mounted by MRWA and MFRS with MRWA issuing a regular series of posts throughout the campaign. Some example social media posts issued by MFRS and MRWA are shown here.

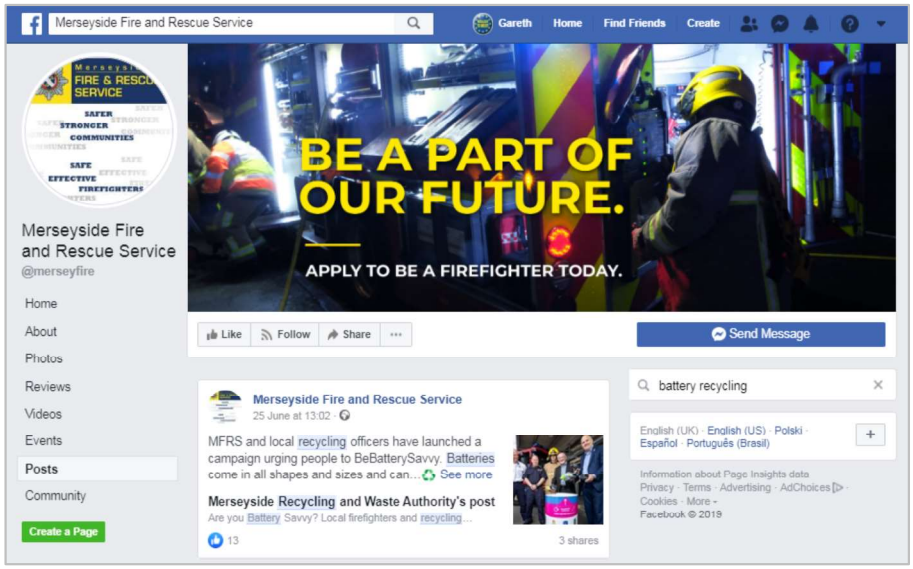

Figure 32: MFRS Facebook page and posts

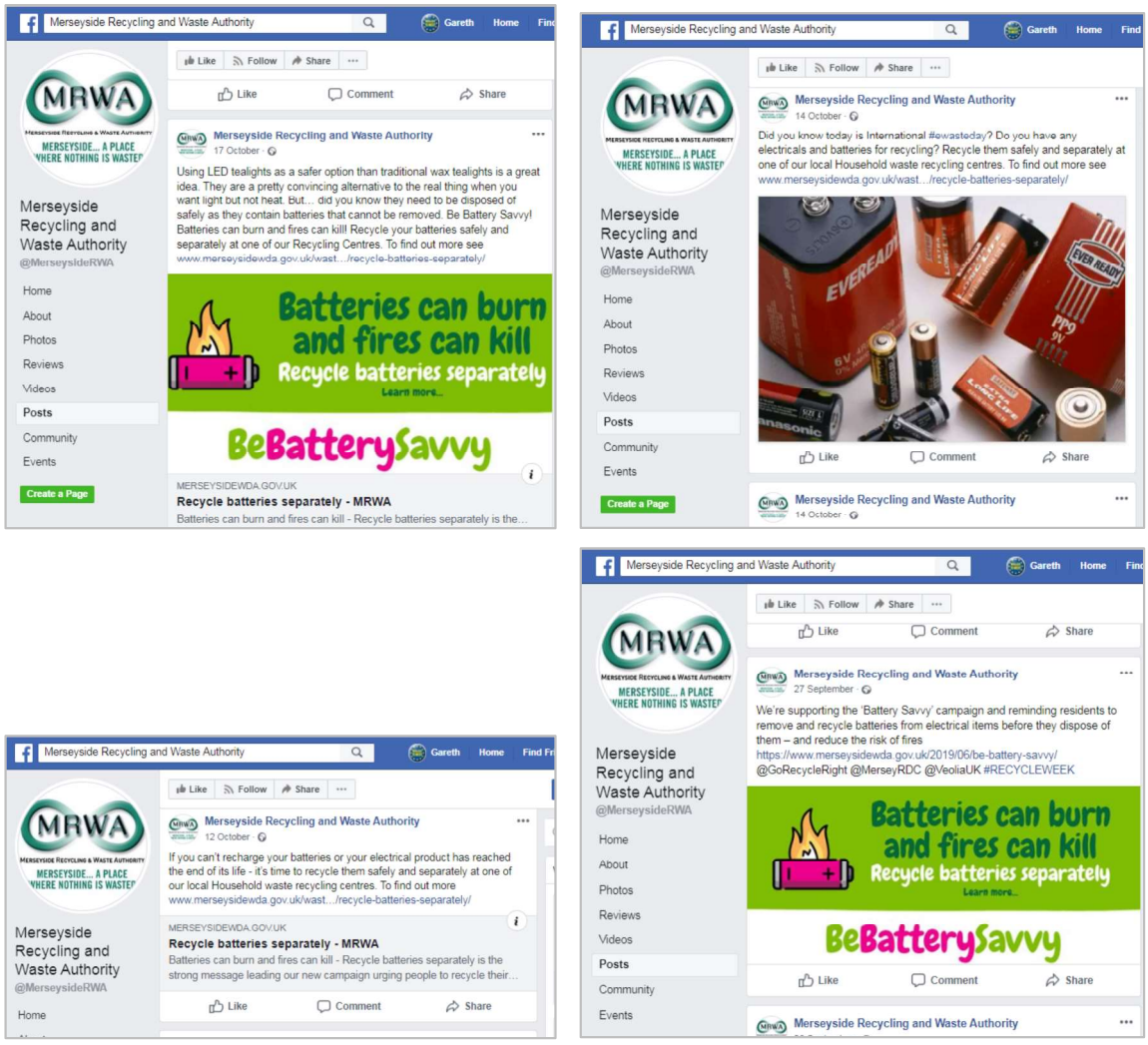

Figure 33: MRWA Facebook page and posts

Results

The results from MRWA include:

Tweets:	Posts:
• 12,091 Impressions • 338 Engagements	• 3208 Reach • 338 Engaged

5 Mid-point evaluation

The collection was launched on the 10th June, 2019 in the three HWRCs.

On the 27th of August Axion carried out a survey at the Huyton HWRC to determine the type and number of devices being disposed of. The purpose of this trial was to understand how many devices, and of what kind are disposed of that may contain batteries. It also provided an opportunity to observe behavior at the HWRC.

On arrival the material collected to date in the "battery containing device" bin was inspected. The collection was highly contaminated with non-WEEE, as well as non-battery powered WEEE. Figure 34 shows the contents of the battery containing device bin.

Figure 34 Battery containing device bin

The quality of the collection demonstrates that the users of the HWRC did not fully understand the communication material, or were unwilling to engage with the new system.

Throughout the day (9 am to 4 pm), 62 devices were disposed of by members of the public and recorded by Axion before being placed in the relevant bin. Of these 62 devices, only 1 contained a

non-removable battery. All other 61 devices were not battery powered. Figure 35 shows which kind of devices were disposed of.

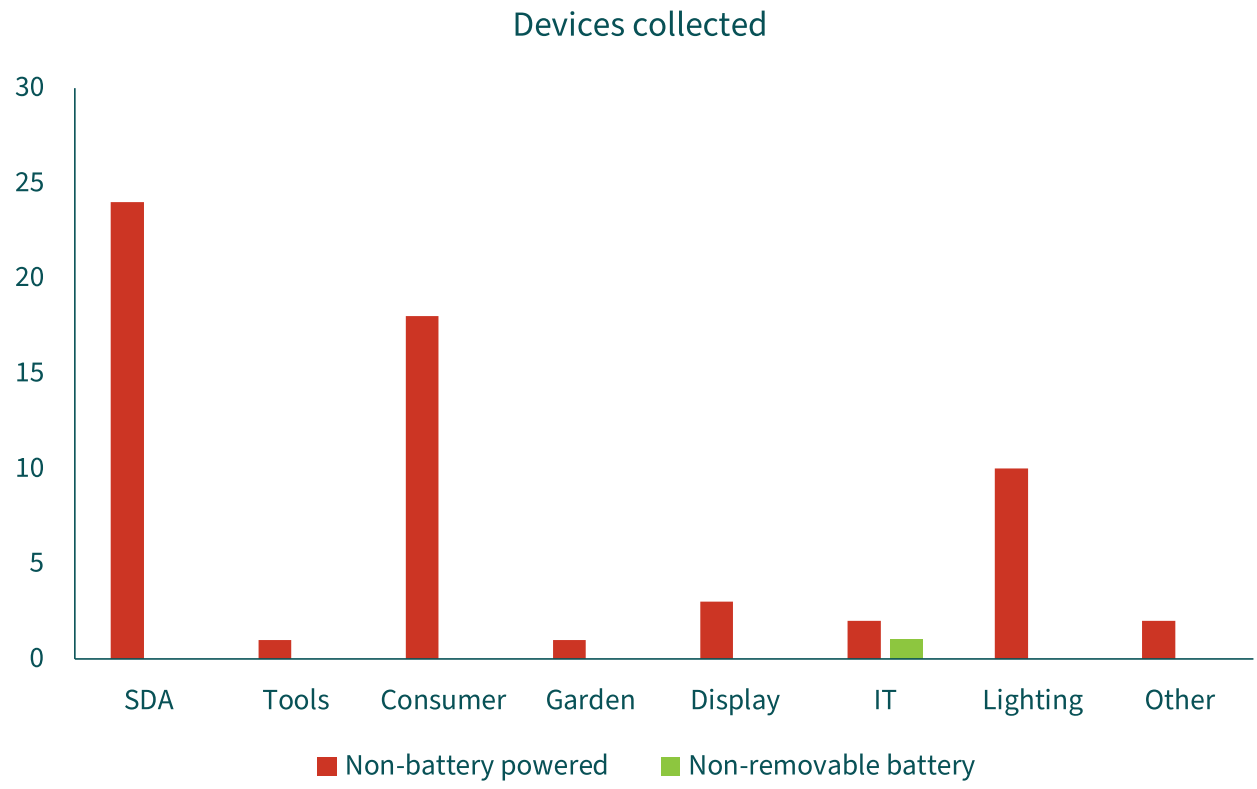

Figure 35 Devices collected at Huyton

In addition to these, there was a single Ni-Cad battery and 20 AA batteries disposed of.

This data agrees somewhat with what was observed during the initial sort, but also demonstrates that relatively few battery containing devices are disposed of in a day. It suggests that having a small bin for battery containing devices should be sufficient to capture the battery containing devices coming in if householders were to use the container correctly.

HWRCs are a busy environment, often with people disposing of more than one type of material. As a result the time taken to observe signage about how to dispose of WEEE is low. Combine this with the relatively low level of disposal of battery containing devices, and the evidence of high contamination levels, it has been concluded that the current trial is not effective.

Asking householders to first determine if their device has an integrated battery, and then dispose of it in the correct container seems to be too complicated. In addition, once a bin begins to be contaminated, people will see this and continue to dispose of general waste. The site staff commented that they have to continually remove non-target materials from the bin.

The project therefore decided to change strategy. The new strategy focused on asking householders to remove batteries from devices before putting in the SMW skip. This approach would not remove the battery containing devices from the SMW, but should still reduce the number of batteries present, and therefore reduce the risk of fire in the material. Before this was done Axion analysed the contents of the “battery containing device” bins at the three HWRCs.

Axion re-visited the three trial sites to analyse the material collected to date, before removing the “battery containing device” bin. This was carried out on the 11th September.

5.1 South Sefton

The South Sefton HWRC appeared to be exclusively collecting “batteries” in the “battery containing device” bin. This is likely due to confusion around the trial both from the users of the HWRC and the staff at the HWRC. Figure 36 shows the contents of the bin in South Sefton.

Figure 36 contents of "battery containing device" bin in South Sefton

It was not possible to sort all the batteries at site as the proper health and safety procedures were not in place. However an estimation to the type of batteries was made, which can be refined if the container is sent to Waste Care for processing. Table 4 shows the batteries collected.

Table 4 Batteries collected in South Sefton bin

Power tool battery	30
Large lead acid	27
Laptop battery	10
Loose lithium ion	≈1000

Figure 37 shows some of the batteries collected in the bin.

Figure 37 Power tool and laptop batteries in the "battery containing device" bin

It is clear that the householders understood the collection was related to batteries, however it was not used in the way it was intended. It is interesting the number of loose lithium ion batteries that were collected, and shows that there is scope to reduce these going into the SMW skip. It also shows householders are able to remove these batteries and other non-AA or non-AAA batteries.

5.2 Old Swan

Old Swan had collected by far the most material. It was not possible to sort through it all on site, however a sample was sorted.

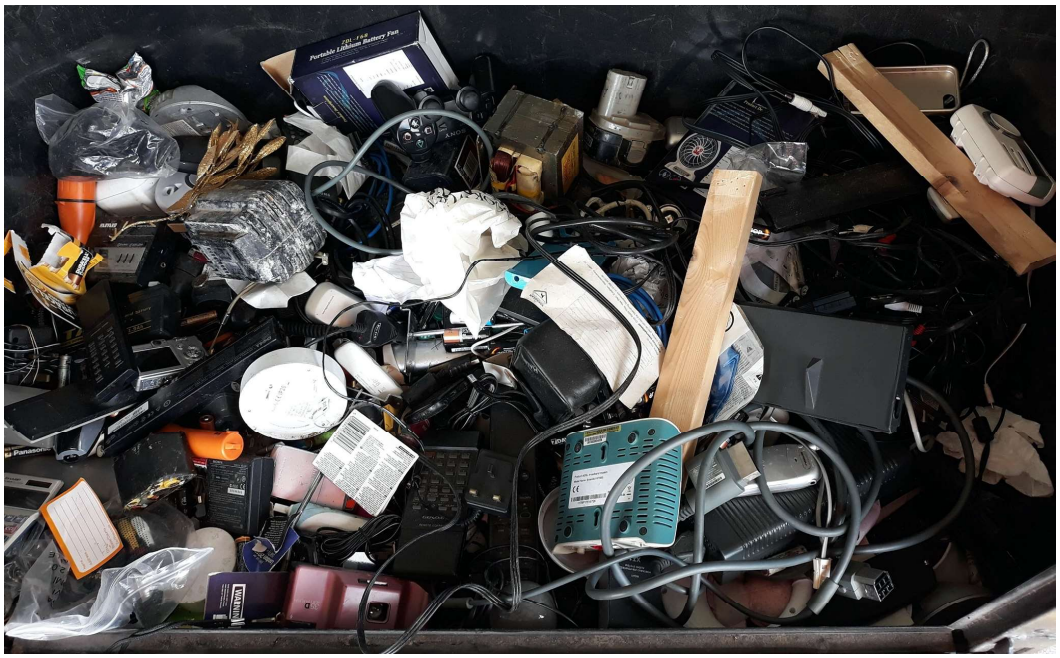

Figure 38 Contents of the "battery containing device" bin in Old Swan

Figure 39 shows all the items in the sample from Old Swan.

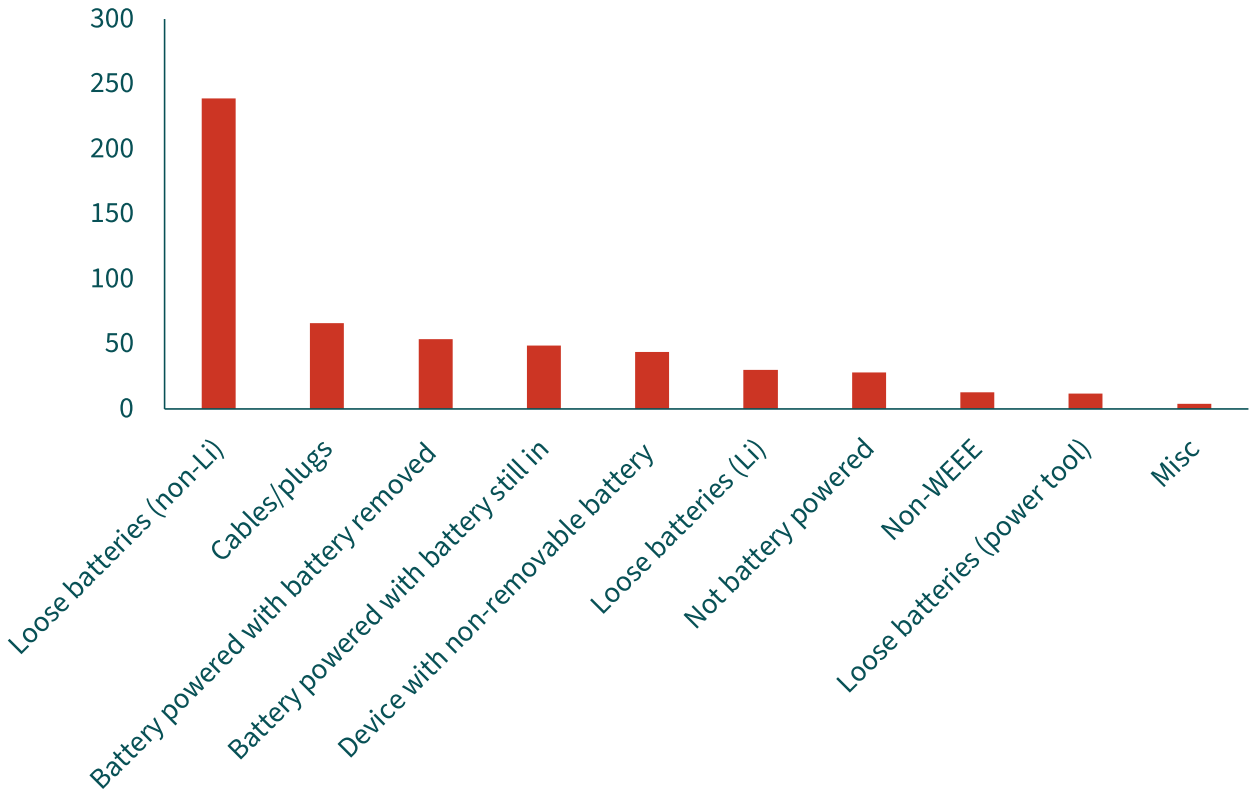

Figure 39 All items in Old Swan collection

By far the most common item was loose non-lithium ion batteries. Excluding the loose batteries and considering only the WEEE items, the most common item was cables/plugs. This is shown in Figure 40.

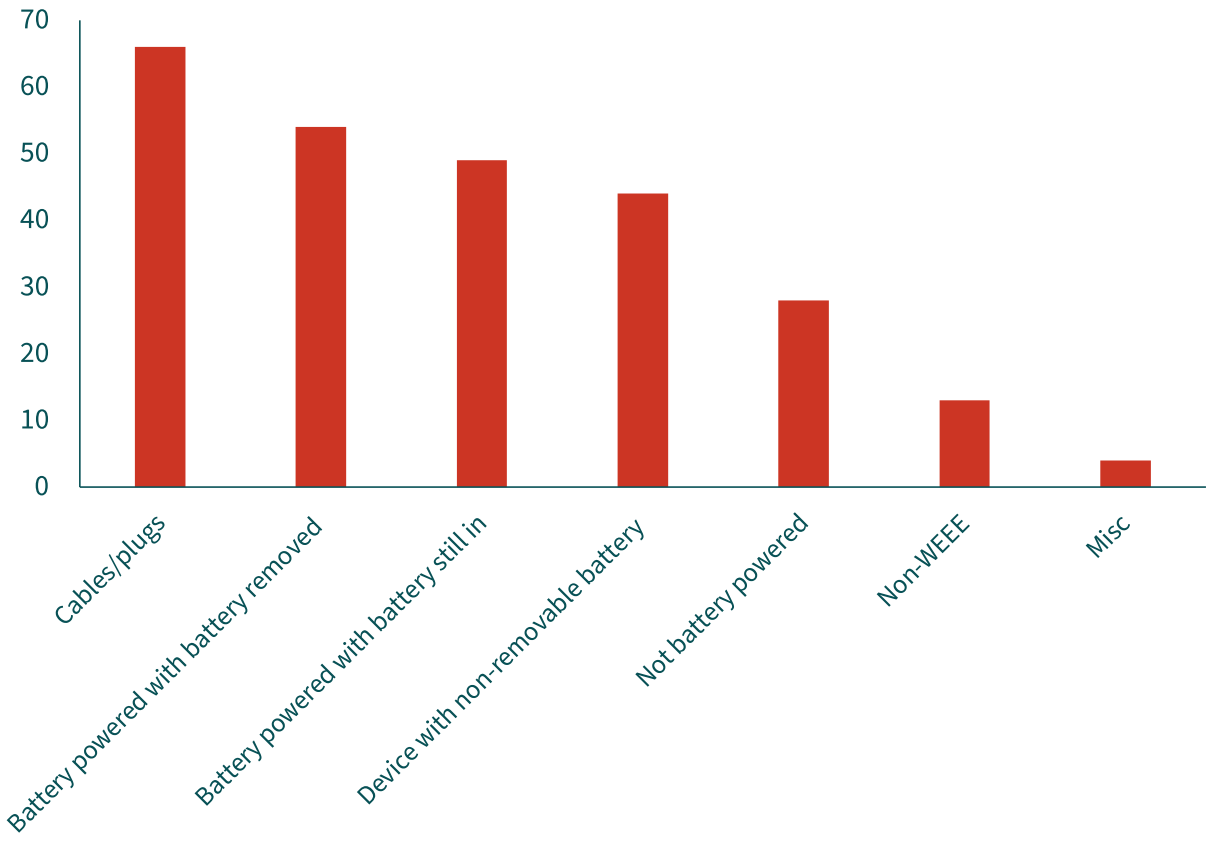

Figure 40 Items in Old Swan collection excluding lose batteries

Compared to previous data on SMW, this distribution is not by chance or at random. Clearly the users of the collection have understood the new collection container was related to batteries as 67% of items were battery powered. In the initial SMW sort only 18% of devices were battery powered.

However, although there was a clear battery "theme" to the collection, only 17% of the items (excluding the loose batteries) were devices with non-removable batteries. The very high level of batteries means that this collection would not be suitable for processing through a shredder, and would have to go through significant pre-sorting to remove all the loose batteries. There has therefore been significant confusion on the householder's part as to what exactly is being targeted in this new collection.

All signage was taken down at Old Swan to act as a control to determine how effective the signage is at South Sefton and Huyton when targeting batteries only.

5.3 Huyton

Of the three sites, the collection at Huyton was possibly the furthest from what was asked for. Very little material had been collected. Figure 41 shows the bin at Huyton.

Figure 41 contents of "battery containing device" bin at Huyton

Figure 42 shows the items collected at Huyton.

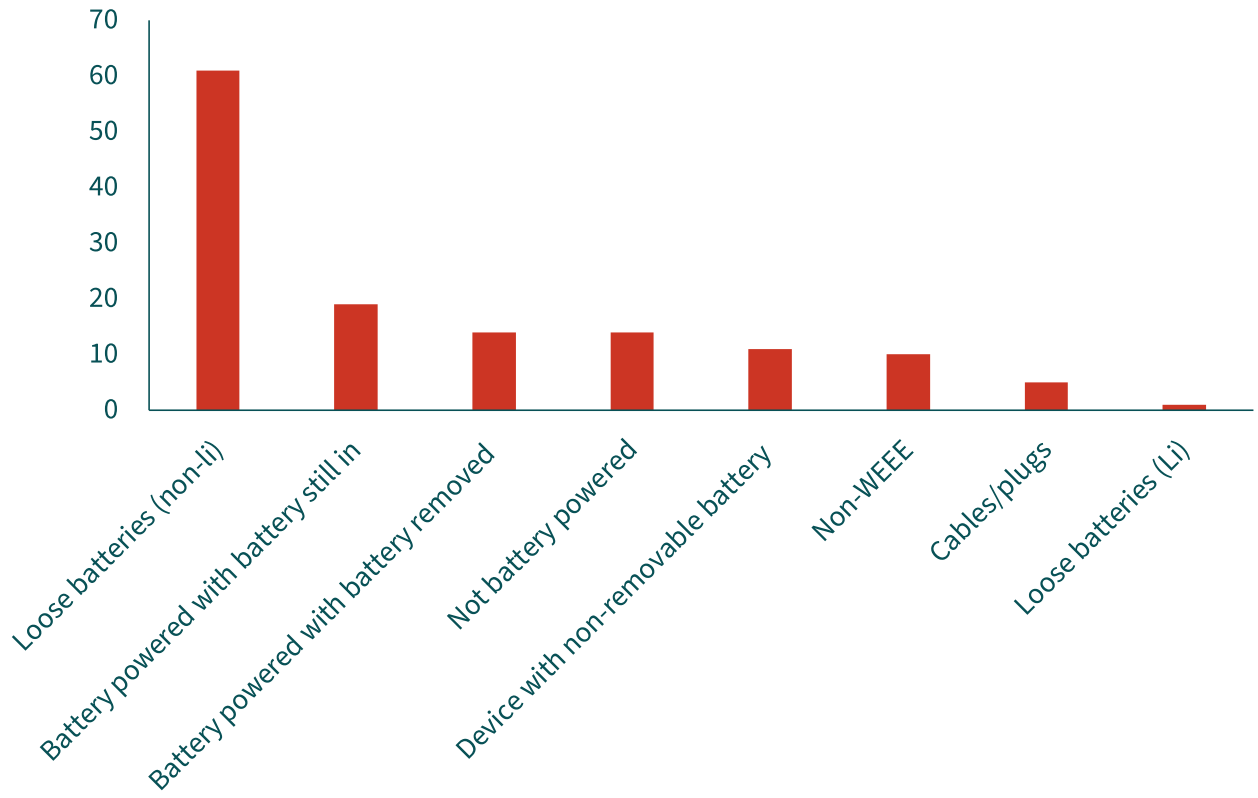

Figure 42 Items collected at Huyton

As with Old Swan, there was a high level of loose non-lithium batteries. This would make it unsuitable to go straight to an SWM processing facility as the batteries would have to be manually removed. Figure 43 shows the items collected excluding the loose batteries.

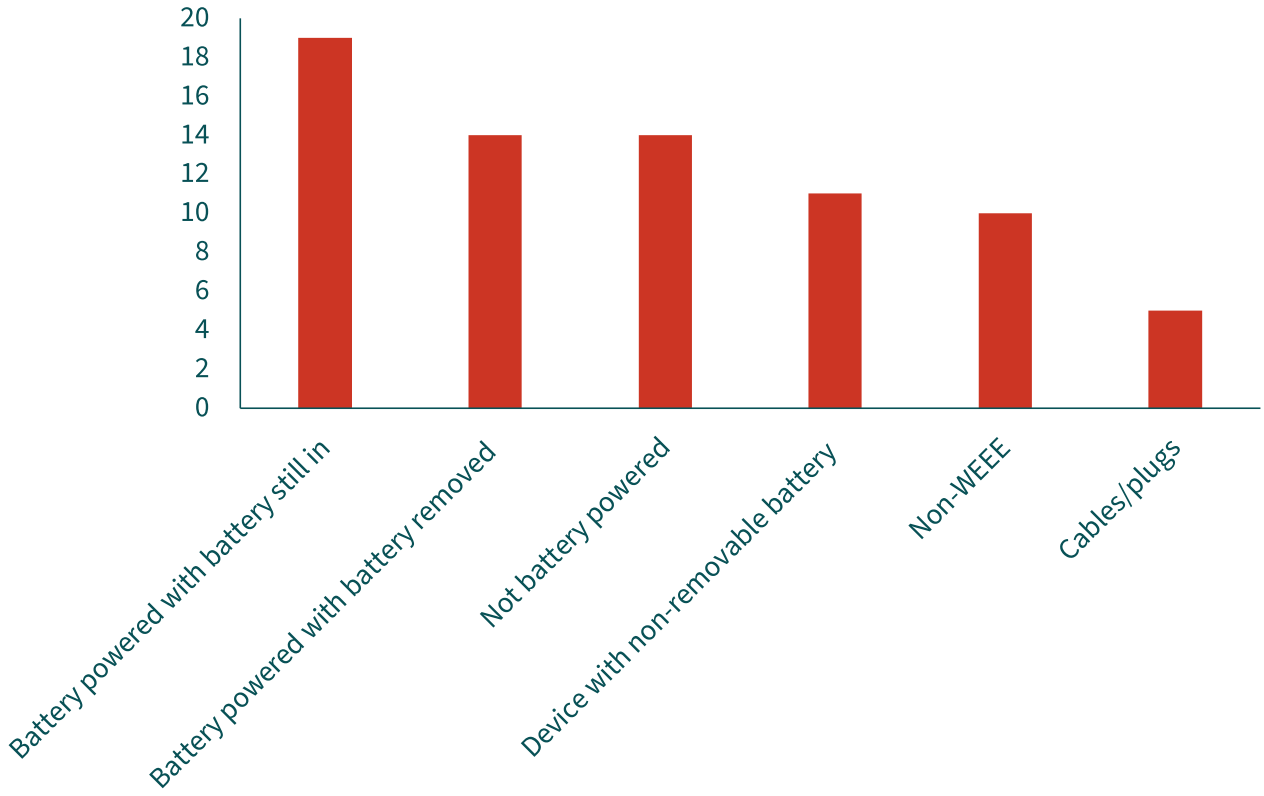

Figure 43 Items collected at Huyton excluding batteries

This collection had more non-battery powered items and more non-WEEE items than the collection at Old Swan. Again, there is some correlation as to the contents of the bin and battery containing devices, but it is not strong and it can be concluded

A conclusion was made that asking the public to separate out “battery containing” devices was not successful. The confusion as to what was required was too great, and with the current setup of HWRCs the staff are unable to police the collection.

The decision was taken therefore to amend the strategy, and focus on communicating only on the removal of batteries.

6 Updated communication strategy

Following the decision to change the collections by removing the container for SMW with batteries and focus on just separating batteries, the following communications actions were undertaken:

All the site and container signage was reviewed:

- The entrance site signage was kept in situ unchanged
- The battery container signage was also retained unchanged
- The information panel was removed and replaced with a much clearer and more direct message

A revised social media programme was developed

6.1 New information panel

The information panel was completely revised into an instruction panel telling people not to put any batteries into the main SMW skip and to remove any batteries and put them into the battery bank. It was deliberately bright and bold and matched the Recycle Now iconography.

Figure 44: New instruction panel

In keeping with the established strategy, the battery bank(s) were kept next to the SMW skip so it was easy for the public to deposit batteries.

Figure 45: New panel in-situ with SMW skip and battery bank(s)

It was agreed by the project team that SMW with batteries should be placed in the main SMW skip and people should ask site operatives for advice if they couldn't decide what to do.

7 End point evaluation

The focus of the tial collections was changed from "battery containing devices" to focusing on communicating the importance of removing all batteries.

Collection of the batteries was carried out at each site before and after the change in the onsite communications. Table 5 shows the collections of batteries carried out at all three sites from January 2018 to November 2019.

Table 5 Battery collections from HWRC since January 2018

Month	Old Swan (kgs)	South Sefton (kgs)	Huyton (kgs)
Jan-18		220	
Feb-18			400
Mar-18	220		
Apr-18		60	
May-18			240
Jun-18	110		
Jul-18	200		
Aug-18	492		581
Sep-18		500	
Jan-19	460	455	690
May-19		400	
Jun-19	494		436
Sep-19	487		661
Oct-19	50	410	50
Nov-19	70	70	120

There is an anomaly in the Old Swan collection data in that in June, July and August of 2018 large quantities of batteries were collected. The data is not of very high quality as it cannot be known whether stockpiling has occurred, which could account for this anomaly.

Taking this anomalous data point out, the collection data can be plotted on a graph. In order to do this the data was averaged out. This was done by taking the period between two collection dates and averaging out the quantity collected in that period. For example, in August 2018 581 kg of batteries were collected from Huyton. The next collection was in January 2019 for 690 kg. It was therefore assumed that in September, October, November, December and January 138 kg was disposed of by the public in each of those months. This averaging is a rough estimate as the amount of material disposed of by the householder cannot be accurately determined using existing data. Figure 46 shows the averaged data.

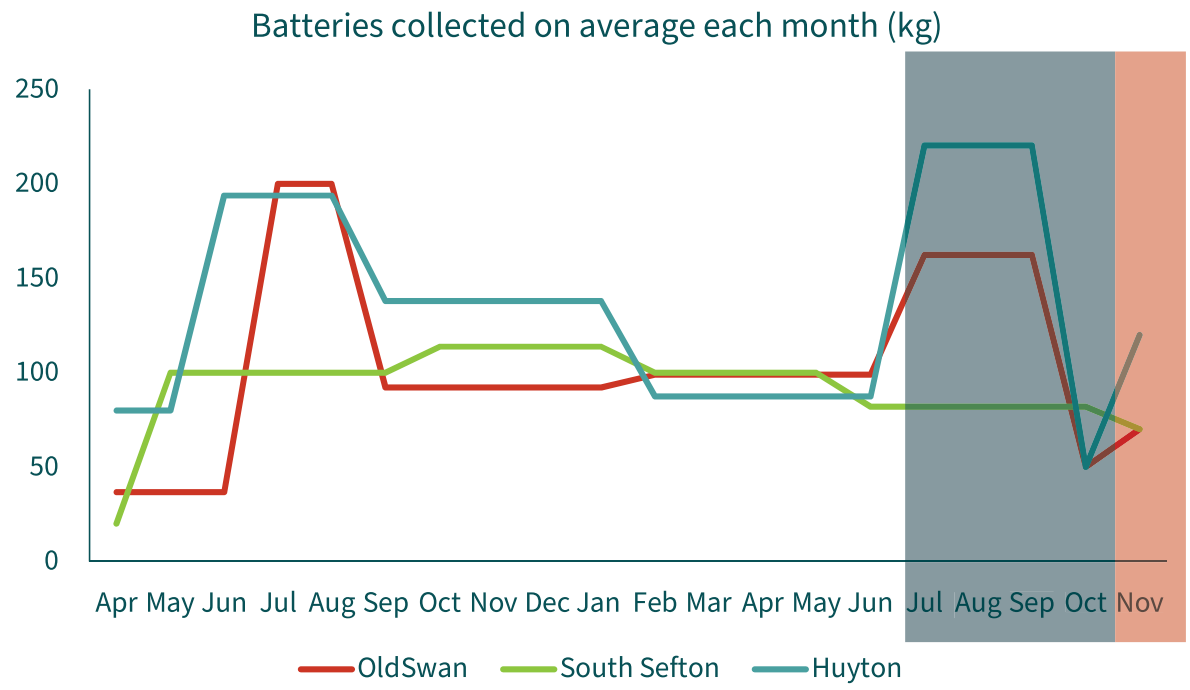

Figure 46 Averaged monthly collection

The blue area highlights when the first stage of the project ran with communication on removing batteries and "battery containing devices" whereas the red area highlights when the communication was changed to instruct removal of all batteries.

The data shows no real change between the 2018 and 2019 summer and autumn periods. Due to the quality of the data, drawing a solid conclusion is not possible, but it suggests the additional communication did not have a discernible effect on the behaviour of the HWRC users. However, it is very early days for the communication campaign, and not seeing an immediate change should not be considered a failure. The length of the trial would need to be extended for at least 6 months to provide a comprehensive analysis.

The composition of the batteries collected before and after the change in communication was also measured. Table 6 shows the composition of the batteries collected before and after the change in the communications to reflect the focus on batteries.

Table 6 Composition of battery collection before and after change in communications

	Huyton		South Sefton		Old Swan	
	Collection 1	Collection 2	Collection 1	Collection 2	Collection 1	Collection 2
Alkaline	38.5%	75.7%	81.6%	89.6%	63.9%	81.9%
Lithium Primary	0.7%	0.1%	0.7%	0.3%	0.3%	0.6%
Button cells	0.5%	1.4%	0.4%	2.0%	1.1%	1.4%
Phone	1.8%	0.4%	1.5%	0.4%	0.6%	0.4%
Laptop	2.6%	1.5%	1.0%	0.3%	6.2%	3.6%
Power tools	4.8%	4.3%	3.3%	0.7%	6.2%	1.2%
Other batteries	48.0%	15.5%	10.5%	5.1%	20.3%	10.6%
Waste	3.1%	1.2%	0.9%	1.7%	1.4%	0.5%

This data has been condensed into fewer categories as shown in Table 7.

Table 7 Condensed composition

	Huyton		South Sefton		Old Swan	
	Collection 1	Collection 2	Collection 1	Collection 2	Collection 1	Collection 2
Alkaline	38.5%	75.7%	81.6%	89.6%	63.9%	81.9%
Lithium	10.0%	6.3%	6.6%	1.7%	13.3%	5.7%
Other chemistry	48.4%	16.9%	11.0%	7.1%	21.4%	12.0%

The results show that proportionally the number of alkaline batteries in the collection increased in relation to the number of lithium or other chemistry batteries. As with the quantity data, it is difficult to interpret this without a longer trial.

In the second round, there seems to be no real difference between Old Swan (where there was no communication) and Huyton and South Sefton where there were signs instructing site users to remove batteries.

More data would be required to draw a scientific conclusion. The current data suggests the onsite communication had little impact on its own.

8 Stakeholder Engagement

As well as the immediate project team, other organisations and stakeholders, national and international, have been interested in the project. The following stakeholder briefings have been carried out by members of the project team:

Organisation	Lead	Details
Industry Council for Electronics Recycling (ICER) ICER is the industry body that represents the UK's Waste Electrical and Electronic Equipment (WEEE) sector. https://icer.org.uk/	Jon Tompkins, S. Norton	Jon gave presentations and updates on the project at two ICER meetings in May and September 2019.
EuRIC EuRIC is the umbrella organisation for the recycling industries in Europe. https://www.euric-aisbl.eu/	Gareth Morton, Eunomia	EuRIC is part of a joint industry taskforce tackling the issue of batteries fires in waste. The project started in June 2019 and has representatives from manufacturers associations, EPR schemes and waste managers/recyclers from across the EU. Gareth presented an update on the project on September 23rd 2019.
Ecosystem Ecosystem is a French WEEE compliance scheme. https://www.ecosystem.eco/en	Gareth Morton, Eunomia Richard McKinley, Axion	Following the EuRIC meeting, Ecosystem approached Eunomia requesting a more detailed briefing on the project as the company is planning to run similar collection trials in France. Gareth and Richard took part in a teleconference with a number of senior officials from Ecosystem on November 8th 2019.

9 Conclusions and recommendations

The consortium members in this project believe that lithium ion batteries in the Small Mixed WEEE present a considerable safety risk. There was consensus from the consortium that the communication campaign should focus on the potential for batteries to cause fires.

From the analysis of the material collected we surmise that sites users either did not understand the concept of separating "battery containing devices" or were unwilling to do so. The HWRC is a busy environment and when on the site, householders appear either unable or unwilling to spend the time it takes to make an informed decision on how to dispose of their electronics properly.

Furthermore, the limited data obtained on the quantity and composition of the batteries collected during the trial suggests there the initial communications had little impact. The method applied in this project was a "low cost" intervention, primarily using static signage. In order to gain very robust data, a longer duration of trial would be needed to observe significant behavioural change and to ensure any differences were not due to "seasonal variation". Such a trail would take at least 12 months, ideally 24.

The following challenges were encountered during the project:

- Obtaining quantitative data is very challenging when attempting to track a product such as batteries in a waste stream like Small Mixed WEEE. Drawing a qualitative conclusion therefore becomes very difficult as there is insufficient data to support the findings;
- Few historical campaigns or information have been run about recycling WEEE or batteries resulting in an overall lack of awareness by the public that batteries are an issue or should be recycled separately;
- Desire by the public at the HWRC to 'get the job done' and spend as little time there as possible resulting in little thought or care given to the proper separation of materials by many users. Recent research suggests that when in a rush people spend less than two seconds at a bin deciding what to do[2].
- Historically levels of lithium ion batteries in SMW was low, and so there was not the focus there is today in ensuring HWRCs are designed and operated to ensure maximum removal of batteries);
- Focus within HWRCs on managing 'popular' high volume/weight waste streams in order to maximise separation and recycling and reduce contamination , for example by keeping asbestos out of rubble, waste out of cardboard, garden furniture out of green waste and gas bottles out of the scrap metal. As a result, WEEE and batteries have typically not been given the same level of attention in HWRC design and operation as it is a significantly smaller volume of material and effort and resource was focussed on the high volume waste streams instead;
- The busy nature of HWRCs and HWRC operatives being unable to adequately oversee and 'police' the SMW containers to intercept materials and encourage separation of batteries along with carrying out their other duties; and
- The positioning of the SMW containers in quieter areas (such as the far end of bays or a distant corner) where they are more difficult for operatives to oversee properly.

[2] Leeds By Example impact report 2019, Dec 2, 2019

There are several interventions which could potentially increase the likelihood that householders will remove batteries and recycle them separately. The recommendations from this project are therefore:

- Increased clear communications by product manufacturers and retailers, waste collectors and fire and rescue services across the UK to highlight the safety issues and promote the separation of batteries for safe recycling (especially Li-ion);
    - The aim should be to prime people so they separate their batteries from their WEEE products before they visit the HWRC;
- Prioritisation of the separation of batteries from SMW by collectors, especially on HWRCs by:
    - Co-locating SMW and battery containers so it is easier for the public to recycle their batteries at the same time as dealing with their WEEE;
    - Repositioning the SMW and battery containers to a more central location where operatives stand more chance of intercepting and 'policing' users;
    - Additional formal training on WEEE and batteries for HWRCs operatives (including 'meet and greet' staff) so they understand the issues and prioritise the proper separation of batteries from SMW; and
    - Clear, bold instructional signage next to co-located SMW/battery containers, highlighting the danger from fires and telling people to separate their batteries and recycle them separately.

Encouraging householders to remove batteries from devices before disposing of in the Small Mixed WEEE skip is still a high priority for the stakeholders. This project has given an invaluable insight into how the public interact with WEEE collections, and the level to which signage alone can have an impact.

APPENDIX 1: SAFeR WEEE Project - Communications Plan

Introduction

WEEE recyclers experience significant issues caused by the presence of Lithium Ion Batteries (LIBs) in Small Mixed WEEE (SMW). LIBs are prone to being damaged and subsequently self-igniting , causing both short and long term devastating environmental impacts, costing businesses and civil society huge sums of money and causing potentially harmful health impacts to nearby populations, especially more vulnerable persons such as the young, elderly or those with respiratory conditions. It has been reported that almost half of fires at WEEE recyclers are due to LIBs.

However, a major issue is that, once at the recycler, it is not possible or practical to identify and separate the batteries. This means batteries should be removed from SMW products at major points of disposal, i.e. household waste and recycling centres (HWRCs).

There is therefore a need to develop and promote a protocol for the safe segregation of LIBs from SMW at HWRCs *and communicate this to the public.*

Project Outline

A practical trial to demonstrate an alternative collection protocol for SMW that will reduce risk of LIBs becoming damaged and self-igniting by segregating all batteries from WEEE items where possible. The trial will require householders to segregate SMW into three streams and remove batteries from items (where possible) before depositing them for recycling:

1) SMW not containing batteries (and with batteries removed);
2) SMW where batteries cannot be removed; and
3) Batteries removed from SMW.

The trial collections will take place at three HWRCs in the Merseyside region:

- Huyton, Knowsley;
- Old Swan, Liverpool; and
- South Sefton, Sefton.

The trial will be launched in June 2019 and run until October 2019 (four months) – precise dates to be confirmed.

Target Audience

Broadly the target audience covers all users of SMW battery powered products living within the area covered by MRWA and 'Recycle for Merseyside and Halton' and specifically within the catchment areas of the three trial HWRCs.

However, within this there are two distinct groups:

- Older people (aged 35+), longer-term residents living in Merseyside (more likely to recycle in general and recycle SMW. Likely to routinely use HWRCs); and

- Younger people (aged 18 – 34) living in Merseyside (likely to be higher 'consumers' of battery operated SMW products but less likely to recycle in general and less likely to recycle SMW).

Branding and messaging

Branding

The initial name for the campaign is proposed as:

'Batteries Not Included'

This:

- Uses a familiar phrase associated with electronic products; and
- Highlights the desirable action i.e. removing batteries from products.

NOTE: Creative ideas for the 'look and feel' for the campaign branding are under development and will be circulated in due course.

Messaging

The messaging needs to do three things:

1) Raise basic awareness of WEEE and SMW as distinct waste streams requiring attention;
2) Increase knowledge about why there is an issue by raising awareness of the fire safety issues associated with LIBs; and
4) Promote the recycling of SMW containing LiBs by signposting householders to recycle their SMW correctly at HWRCs.

Initial messaging ideas include:

- Highlighting the danger due to the fire risks from LIBs;
- Highlighting the scale of the problem (number of incidents, cost of damage etc.); and
- Pointing out the benefits of removing LIBs from products wherever possible.

Messaging will focus on different product types which may be used to target different audience groups e.g.:

- LiBs - Laptops, tablets, PDAs, mobile phones, cameras (video etc.).; and
- Other rechargeable/portable electronic/electrical products e.g. power tools, hand held vacuum cleaners etc.

Battery types and messaging:

There are a number of different types of batteries used in SMW products including:

- Non-rechargeable household batteries (zinc carbon, zinc chloride and alkaline manganese).
- Non-rechargeable household button cell batteries (zinc Air, silver oxide and lithium).

- Rechargeable household batteries (nickel cadmium, nickel metal hydride, lithium ion).

It will be impossible to expect the public to distinguish between the different types of batteries, therefor the campaign will target all products with batteries.

National WEEE messaging and communications research

National research carried out by Material Focus has highlighted the following:

Target audience/s:

- Older people, living in an area for longer and from rural areas tend to recycle more (in general and WEEE).
- Younger people (18-34), new to an area and from urban areas recycle less (in general and SMW in particular).

Barriers:

- Basically people are confused by WEEE.
- Lack of awareness and understanding of WEEE as a distinct waste stream requiring separate attention.
- Knowledge of how/where to recycle properly.
- Access to transport (e.g. to take materials to HWRCs).
- Concerns over data and identity theft.
- Hoarding (especially of SMW with an emotional attachment, potential usefulness or perceived value).

Drivers

- Preventing fires.
- Protecting the environment.
- Protecting the health of vulnerable groups.
- Reducing waste sent to landfill.

Communications activities

The project will undertake three main communications and engagement activities including:

- Onsite householder communications;
- Training for HWRC staff; and
- A wider campaign engaging householders across Merseyside.

Onsite Communications

The onsite householder communications (the combination of which may be tailored to each site) include the following:

- Signage on and next to recycling containers;
- Infographic style decision-making guide next to collection banks; and
- Promotional ‘Batteries Not Included’ badges and hi-viz for HWRC staff.

WRAP's Recycle Now iconography will be used for all on-site signage.

HWRC staff training

HWRC staff (principally the Meet & Greet staff) at the three sites will be briefed to provide different levels of customer intervention:

- Low level – business as usual, provide specific advice only if asked directly;
- Medium level – Site staff provided with campaign 'uniforms' (badge and hi-viz) and will provide advice if asked;
- High level – Site staff provided with campaign 'uniforms' (badge and hi-viz). Meet and greet staff actively ask customers asking about SMW and direct/advise them accordingly.

Wider engagement campaign

The communications activities will be co-ordinated jointly by Rose Herbert from Veolia and Pat Gibbons from Merseyside Fire and Rescue Service, drawing on and co-ordinating appropriate resources from their own organisations.

Initial proposals for wider engagement activity include:

- Press release, media briefing and launch photocall with fire fighters, Veolia, MRWA (incl. lead councillors) and suitable WEEE products for local/regional media at main participating HWRC;
- Press release for relevant trade media;
- Secondary photocalls with lead councillors at the other HWRCs for more local media;
- Social media campaign;
- Information on relevant websites e.g. MRWA (recycle for Merseyside and Halton), relevant local councils, Merseyside Fire and Rescue Service, Veolia etc.; and
- Briefings for call centre staff.

Social media campaign

There will be a planned programme of posts to:

- Highlight the issues and dangers posed by battery fires;
- The impact of inappropriate recycling/disposal of LiBs on the environment and the impact of waste fires caused by LIBs on health and civil society;
- The benefits of recycling/diverting batteries from landfill;
- What the public should do with their SMW products with batteries;
- What to do about residual data; and
- Facts and figures around SMW and battery recycling.

NOTE: More detailed ideas for social media posts will be developed and circulated in due course.

Monitoring and Evaluation

The communications will be monitored and evaluated via the following:

- Media coverage;

- Social media activity (number of posts, Likes, Shares, Retweets etc., tone of discussions);
- Web pages (number of page impressions, unique visits etc.);
- Number/type of enquiries to call centres; and
- Amount of material deposited in recycling containers.

Appendix 2: SAFeR WEEE Project Media Protocol

The objective of the SAFeR WEEE Project's media protocol is to ensure that the information contained in all communication with stakeholders is consistent, accurate, fair, timely and acknowledges the project partners where relevant.

This protocol establishes a chain of command and outlines the necessary review processes for all external communications, as well as establishing correct procedure for interactions with the media.

1. Project partners
2. Chain of command
3. Review and approval process
4. Media relations
5. Press releases
6. Social media
7. Other communications

Project partners

The project partners comprise:

Organisation	Main project contact
Material Focus/Tech UK (Funder)	Scott Butler
Axion	Richard McKinlay
Eunomia	Gareth Morton (Project Co-ordinator)
Veolia	Rose Herbert
Merseyside Recycling and Waste Authority (MRWA)	Rick Smales Media contact: John Lally, Communications and Marketing Officer
Merseyside Fire and Rescue Service (MFRS)	Pat Gibbons Media contact: Andrew Highton, Corporate Communications Manager
Viridor	Laura Rattigan
WasteCare	David Reynolds
S. Norton	Jon Tomkins

Chain of command

The individual(s) with overall responsibility for media relations and external communications for the project is:

- Gareth Morton at Eunomia.

In the case of this individual being unavailable, please refer all enquiries, both external and internal to/

- Richard McKinley at Axion.

The main media contacts for local media relations (in Merseyside) are:

- Rose Herbert for Veolia and MRWA (alternative contact:
- Andrew Highton, Corporate Communications Manager, MFRS

It is Gareth's responsibility to notify all project partners of any media enquiries and to liaise with the appropriate project partner/s regarding any response.

Contact details:

Name & organisation	Contact details
Gareth Morton, Eunomia	Contact details withheld for publication
Richard McKinley, Axion	Contact details withheld for publication
Rose Herbert for Veolia and MRWA Or John Lally Communications and Marketing Officer, MRWA Andrew Highton, Corporate Communications Manager, MFRS	Contact details withheld for publication

Review and approval process

All communications with the media must be signed off by relevant parties before being released.

For national media relations, before release, all external communications need to be reviewed/approved by:

- Gareth Morton, Eunomia
- Rose Herbert, Veolia (and on behalf of MRWA)
- Andrew Highton, MFRS
- Scott Butler, Material Focus
- Laura Rattigan, Viridor
- David Reynolds, WasteCare
- Jon Tomkins, S. Norton

For local media relations (i.e. relating specifically to the trial collections in Merseyside), before release, all external communications need to be reviewed/approved by:

- Gareth Morton, Eunomia

- Rose Herbert, Veolia (and on behalf of MRWA)
- Andrew Highton, Corporate Communications Manager, MFRS
- Scott Butler, Material Focus

Local releases (i.e. in Merseyside) will be issued by:

- John Lally Communications and Marketing Officer, MRWA

National releases will be issued by:

- John Lally Communications and Marketing Officer, MRWA
- Material Focus would post national releases simultaneously/immediately afterwards on the Tech UK website

Acknowledgements and branding

All project partners will be acknowledged in all media communications.

On-site signage will focus on delivering clear messaging to site visitors and will not carry project partner logos.

Handouts and other literature may acknowledge project partners if space permits. The main local branding will be Recycle for Merseyside and Halton:

Procedure

- Communication is drafted.
- Communication is approved by Gareth Morton, Eunomia.
- Quotes included in the communication are sent for approval to relevant spokespeople/organisations.
- Communication is sent for review to all project partners mentioned in the release.
- Communication is sent for review to all project partners involved in activities mentioned in the communication.
- Communication is sent for review to Material Focus
- Communication is approved by Rose Herbert for Veolia & MRWA, Andrew Highton for MFRS, Scott Butler, Material Focus and other project partners as appropriate.
- All relevant parties will be informed of the release of the communication, and any subsequent press or media activity.

Response/turnaround time

Project partners agree to respond/turnaround the following items within the proscribed timescales:

- Press/media releases (inc. social media posts) – 48 hours

- Printed communications – 4 working days

Media Relations

All enquiries should be referred to Gareth Morton (Eunomia) – The Spokesperson.

- The Spokesperson will respond directly or designate another party to serve as spokesperson.
- The Spokesperson will direct the process by which a response is determined or a position taken.
- If the Spokesperson is not available enquiries should be referred to Richard McKinley, Axion and Rose Herbert, Veolia/MRWA.

Procedure

1) Refer all enquiries to Gareth Morton.
2) If Gareth is not available, refer to Richard McKinley and Rose Herbert.
3) If neither is available:
    a. Take down the reporters' details, publication and deadline.
    b. Find out the topic and scope of their enquiry.
    c. Do not volunteer any information.
5) Pass this information to Gareth Morton immediately.

Press releases

Press releases must be approved by all the project partners before being released (unless they state they are happy not to be included).

Procedure

4) All project partners agree to key messages.
5) All project identify key publications (national and local as appropriate).
6) Press release drafted by Eunomia.
7) Review of press release (see section 3.0).
8) Press release issued:
    a. National releases issued by Eunomia.
    b. Local releases to be released by MRWA and MFRS.

Social media

Social media is another form of external communication. All planned social media activity from all project partner's accounts need to be approved by Gareth Morton at Eunomia who will liaise with other project partners as appropriate.

Discussion of work or outcomes on business or personal accounts is prohibited unless explicit, written approval is given.

All social media posts must go through the review and approval process outlined in section 2.0.

APPENDIX 3: SAFeR WEEE FAQs

BeBatterySavvy

Frequently Asked Questions

Q: What is the BeBatterySavvy Campaign?

A: It's a trial campaign to get people to recycle batteries safely and separately. Its main message is:

"Batteries can burn and fires can kill - Recycle batteries separately".

Q: What is the campaign trying to do?

A: We are trying to get people to take the batteries out of their waste electrical appliances and recycle them separately. We are trialling this at three household waste recycling centres in Merseyside:

- South Sefton Household Waste Recycling Centre, Irlam Road, Bootle L20 4AE
- Old Swan Household Waste Recycling Centre, Cheadle Avenue, Liverpool L13 3AF
- Huyton Household Waste Recycling Centre, Wilson Road, Huyton L36 6AD

The sites now have the following containers:

6) Batteries (of all types) – go in the blue 'battery' container.
7) Normal small appliances (with a plug) and small appliances with the batteries taken out - go in the existing 'small appliances' container.
8) Small appliances with batteries still in (or with integrated batteries) - go in the new 'small appliances with batteries' container.

Battery banks may also be available locally for residents to recycle their batteries. Many shops will have a battery container for ordinary household batteries. Further information on battery collection points can be found on www.recyclenow.com.

Q: How long will the trial last for?

A: It will run from June – October 2019.

Q: Why are people being asked to take the batteries out of their electrical appliances?

A: Batteries can catch fire if they are damaged during the recycling process. We need people to be savvy and not discard their used batteries inappropriately e.g. put in the household waste bin or left in electronic appliances when they are thrown away or recycled.

- A battery is thought to have caused a large fire in February 2019 at a St Helens' based Waste Electrical and Electronic Equipment (WEEE) plant run by waste company Viridor.
- The Environmental Services Association (ESA), the trade body representing the UK's resource and waste management industry, reports that of the 510 fires reported by ESA

members across the UK in 2017-18, a quarter (25%) were attributed to rechargeable lithium-ion batteries, up from 20% in the previous year.

Q: Won't putting all the batteries together create a bigger fire risk than leaving them in the items?

A: No, because fires can happen when batteries are damaged. Putting batteries safely in battery recycling containers ensures they are purposely identified and can be sent to specialist recycling facilities. The batteries are carefully handled and collected in specialist containers which store, handle and transport the batteries appropriately and safely.

There is a greater risk if batteries are not removed from small appliances because when these items are sent for recycling and processing, they are moved around by heavy machinery and the batteries in them can be easily damaged, which could cause a serious fire.

Q: Not all WEEE items have removable batteries – some batteries just can't be removed - what happens to these?

A: There are a number of electrical appliances and products where the batteries can't be removed easily - in this case we have installed a new container for small appliances with batteries still in. However, we are asking people to separate batteries from electrical appliances wherever this is possible, so we can reduce the risk of fires.

Q: What if site users don't want to remove the batteries from their items?

A: We would like people to remove the batteries but if they don't want to then they can put the item (with the battery still in) in the appropriate container.

However, we should encourage people to remove batteries where possible for the reasons listed above – namely to prevent fires from occurring.

Q: What happens to the batteries and small appliances?

A: The batteries are sent to WasteCare in Halifax where they are sorted into different battery chemistries (Alkaline, NiCad, NiMH, Lithium primary, Lithium-ion, button cells, lead acid) and any rubbish or non-battery material is removed. Alkaline batteries are recycled at Halifax (first and only plant in the UK). The lead acid batteries are also recycled in the UK. Currently, the other battery chemistries are sent to specialist battery recyclers in northern Europe.

A: Small appliances with and without batteries are taken to Viridor in St Helens - one of the most sophisticated WEEE (Waste Electrical and Electronic Equipment) recycling plants in the UK. Here they treat all types of WEEE including Fridges, TVs, domestic appliances and computer equipment.

Q: Where can I get more information?

A: More information is available at www.merseysidewda.gov.uk

Q: Who is behind the campaign?

The campaign is funded by Material Focus and supported by a number of waste management companies involved in the collection of Waste Electrical and Electronic Equipment (WEEE) and

batteries for recycling, Merseyside Recycling and Waste Authority and Merseyside Fire and Rescue Service.

The project partners:

Material Focus (formerly the WEEE Fund), is a not-for-profit organisation whose goal is to stop the nation throwing away or hoarding all their old small electricals. It has launched the new UK-wide Recycle Your Electricals campaign. The campaign will reveal the value hidden in electricals and will make it easier for us all to recycle and reuse the small electricals we no longer need by providing more recycling points as well as providing practical information on how households can recycle. A new recycling locator has launched on www.recycleyourelectricals.org.uk with details of over 2,000 recycling, repair and reuse points, with new collection and drop-off points continually being added.

The Recycle Your Electricals campaign is funded by producers of electrical appliances. The UK government sets annual targets for the recycling of all waste electricals, including small electricals, under the WEEE (Waste Electrical and Electronic Equipment) Regulations. If producers of electrical appliances don't meet this target, then they contribute towards a WEEE compliance fee fund. Material Focus manages this fund to support action that will increase the levels of reuse and recycling of old electricals across the UK.

APPENDIX 4: SAFeR WEEE project launch - national press release

20th June 2019

Be Battery Savvy – new campaign launched by recycling industry and firefighters to prevent battery fires

A new campaign has launched in the Liverpool City Region encouraging people to 'BeBatterySavvy', and prevent battery fires by recycling them separately and safely.

"Batteries can burn and fires can kill - Recycle batteries separately" is the strong message from the new campaign running from June to October 2019 urging people to 'BeBatterySavvy' and recycle their batteries separately and safely.

The campaign is part of the SAFeR WEEE project which aims to find out whether people are willing to separate batteries for recycling. This trial is being spearheaded locally by Merseyside Recycling and Waste Authority (MRWA) and Merseyside Fire & Rescue Service, working with Axion Consulting, Eunomia Consulting, S Norton, Veolia, Viridor and Wastecare. The SAFeR WEEE project is funded by Material Focus generated from the WEEE Compliance Fee in 2017[1]. Results from the trial will be shared in December, and it is hoped they could form the basis of a new voluntary collection protocol for the industry.

Batteries are a serious issue for the waste industry, especially rechargeable ones which are used in all kinds of electronic products[2] and, if damaged, can cause intense fires, for example:

- A large fire in February 2019 at a St Helens' based Waste Electrical and Electronic Equipment (WEEE) plant run by waste company Viridor; and
- A small fire in May 2019 in a recycling collection vehicle belonging to Harrogate Borough Council in North Yorkshire caused by a laptop battery.

The Environmental Services Association (ESA), the trade body representing the UK's resource and waste management industry, reports that its members think nearly 130 fires were caused by rechargeable lithium-ion batteries in 2017-18. This is a 5% increase on the previous year.

The three Household Waste Recycling Centres (HWRC) participating in the trial are South Sefton HWRC in Sefton, Old Swan HWRC in Liverpool and Huyton HWRC in Knowsley. At the HWRCs, people will be able to separate batteries and WEEE (small appliances) into:

1) Batteries (of all types);
2) Small appliances with batteries that cannot be taken out; and
3) Small appliances with the batteries taken out – these will go in with ordinary WEEE.

As well as the special recycling banks, there will be a communications campaign utilising social media, new site signage, training for site operatives and branded hi-vis clothing to raise awareness of the issue of battery fires, the importance of recycling batteries safely as well as making battery recycling at the participating HWRCs highly visible.

Speaking at the launch, Councillor Tony Concepcion, Chairperson of MRWA, said: "We're seeing an increase in the amount of electrical items coming into our Recycling Centres[3], which is to be expected considering the number of gadgets people use these days. However, this increase is matched by a rise in the number of batteries which, as we've seen around the country, can be a potential danger.

"We don't want to risk fires at our Recycling Centres, or further down the supply chain, so we've joined this campaign to make members of the public aware of the dangers batteries can bring. We've installed new containers and signage at three of our sites and depending on how the campaign goes could roll this out to the rest of our HWRCs."

Scott Butler, Executive Director, Material Focus, said: "We are delighted to support this collaborative project that will explore the safe handling of lithium ion batteries at the end of life, and help the UK minimise fire risks at recycling sites."

ENDS

Notes to Editors:

For more information contact:

Gareth Morton, Eunomia Research & Consulting Mobile: +44 (0) 774 189 7510 or Head Office: +44 (0) 117 917 2250

Or

John Lally, Communications and Marketing Officer, Merseyside Recycling and Waste Authority, Direct Dial: 0151 255 2568 General enquiries: 0151 255 1444

PHOTOCAPTION (suggestion):

Local firefighters stand by as Merseyside Recycling and Waste Authority Chair Cllr Tony Conception and Chief Executive Carl Beer launch the BeBatterySavvy campaign by taking rechargeable batteries out of electronic products and recycling them separately using new facilities at Huyton Household Waste Recycling Centre on June 19th 2019.

Notes for Editors:

(1) The WEEE Compliance Fee Fund - Over £11 million is being made available to support environmental projects from money that was collected through the 2017 and 2018 WEEE Compliance Fee mechanism. The fund is expected to be spent over the next three years on a range of activities, including technical research, communications, behaviour change activities and local projects. More information on the WEEE Compliance Fee Fund is available at www.weeefund.uk.

(2) Rechargeable batteries (especially Li-ion) can be found in any electronic products that can be recharged:

- Laptops, smart phones, tablets etc.
- Cameras, portable radios or speakers
- Vaping devices, rechargeable toothbrushes
- Solar powered devices (containing a battery)
- Cordless (rechargeable) Vacuum cleaners and other cleaning appliances
- Cordless DIY tools such as screwdrivers or drills
- Toys, leisure and sports equipment such as hand-held video game units, electric scooters and hoverboards etc.

At the end of their life, the battery should be removed and the product and battery recycled separately.

(3) Materials deposited at Merseyside Household Waste Recycling Centres:

MATERIAL	2017/18 (tonnes)	2018/19 (tonnes)
Household batteries	13.33	22.70
Small electricals	2880	2906

Project Partners:

Axion Recycling Ltd operates innovative processing solutions to recover value from waste resources and provides circular economy consultancy services. Axion is running the project jointly with Eunomia.

Eunomia is an independent consultancy dedicated to achieving better environmental and commercial outcomes for clients across the public, private and voluntary/NGO sectors. Eunomia is running the project jointly with Axion.

Merseyside Fire & Rescue Service (MFRS) is the statutory fire and rescue service covering Merseyside and is providing advice on safe storage and treatment of batteries, and supporting with communication during the collection trial.

Merseyside Recycling and Waste Authority (MRWA) is responsible for the disposal of municipal waste on Merseyside and works with all the local authorities on Merseyside – Knowsley, Liverpool, Sefton, St Helens and Wirral. MRWA is allowing the project to run on three of its HWRCs and supporting the communications.

S Norton is the UK's largest independent metal recycler and has significant expertise in WEEE processing. S Norton is providing space at its sites for storage and analysis of small mixed WEEE (SMW) and batteries.

Veolia UK runs a range of waste management and recycling services for MRWA. Veolia will help by providing sites for the collection trials and facilities, staff, and equipment for SMW collection (skips, etc.).

Viridor is a leading waste management company and manages a network of household waste recycling centres (HWRCs) in partnership with local authorities across the UK and is providing technical and logistical support to the project.

Wastecare offers total waste management solutions and nationwide collection services and has expertise in collection and disposal of WEEE and batteries. Wastecare is supporting the project by providing practical expertise in the collection, storage, and treatment of SMW and batteries.

Material Focus is an independent, not-for-profit organisation on a mission to save valuable, critical and finite materials inside electricals from going to waste. We do this through

Insights

We identify, produce and share insights to improve the UK e-waste system and inform policy decisions.

Investments

We identify and fund projects that make it easier to reuse and recycle; or that encourage circular design.

Inspiration

We inspire, educate and encourage the UK public to fix, donate, sell and recycle their unwanted electricals through our Recycle Your Electricals campaign.

www.materialfocus.org.uk