

WEEE Collections Monitoring



Research to trial and evaluate WEEE collections for re-use and recycling through Knowhow's Cardiff Customer Service Centre (CSC).

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Our mission is to accelerate the move to a sustainable resource-efficient economy through re-inventing how we design, produce and sell products; re-thinking how we use and consume products; and re-defining what is possible through re-use and recycling.

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Front cover photography: Rob Holdway – WEEE Collections Third Man Day

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Glossary

CSC	Customer Service Centre
SDA	Small Domestic Appliances
SHW	Small Household WEEE
EEE	Electrical and Electronic Equipment
WEEE	Waste Electrical and Electronic Equipment

Acknowledgements

Alan Dukinfield – Director S2S Group¹. The product disassembly and material breakdown was undertaken by S2S Group – a leading IT Asset Management Company (ITAM) and Approved Authorised Treatment Facility (AATF).

¹ <http://www.s2s.uk.com/>

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Key facts

- WEEE is the fastest growing waste type in the UK with 38% sent to landfill and 55% collected for recycling, of which only 7% is re-used²;
- 61% of UK households have at least one product stored and unused at home. Consumer behaviour of hoarding unused/unwanted products is a potential barrier to the recovery of household EEE for recycling and re-use.³
- The potential for collecting Small Household WEEE from Knowhow customers presents a convenient opportunity to take-back small WEEE from households for onward recycling;
- A 6 week trial with Knowhow's Cardiff Customer Service Centre collected 47 products weighing 285.72Kg;
- All products collected were unsuitable for re-use due to their physical condition e.g., missing or broken minor parts or age with all products over 5 years old and 40% over 15 years old;
- WEEE collections are more viable during installation visits rather than delivery 'drops' due to the amount of time spent by Knowhow on-site and the ability of the home owner to retrieve products (e.g., 'hoarded' and stored in the garage);
- The additional stimulus from direct engagement ('third-man day') resulted in a significantly higher ratio of products collected per household visited (6.7Kg per household);
- An extrapolation of the 'third-man day' data indicates the trial could have collected 2,310 products and 11.256 tonnes of small WEEE⁴;
- Across a year the Cardiff CSC would generate 27,720 products and 135 tonnes of WEEE via this route;
- Across all 19 Knowhow CSCs this would be 526,680 products and 2,565 tonnes of WEEE. This has significant potential in terms of retailer responsibility and WEEE evidence;
- Local geography including social aspects (e.g., wealth and size/location of home) has a direct impact on the likelihood of WEEE collected;

² <http://www.wrap.org.uk/sites/files/wrap/Switched%20on%20to%20Value%2012%202014.pdf>

³ WRAP's Sustainable EEE Consumer Tracker - Survey of 2,186 people - Spring 2016

⁴ (1,680 installations*1.375products per visit and 6.7Kg per visit).

- Despite the relatively low product return rates the trial showed it is a viable and convenient method for recovering products for recycling.

Introduction

This project supports WRAP's Electrical and Electronic Equipment Sustainability Action Plan (esap), to improve business efficiency and gain greater value from re-use and recycling⁵.

The primary aim of this project was to trial and evaluate Waste Electrical and Electronic Equipment (WEEE) collections of Small Household WEEE⁶ (SHW) through Knowhow's⁷ Cardiff Customer Service Centre (CSC) for onward re-use and recycling.

WEEE is the fastest growing waste type in the UK with 38% sent to landfill and 55% collected for recycling, of which only 7% is re-used⁸. Consumer behaviour of hoarding unused/unwanted products is a potential barrier to the recovery of household EEE for recycling and re-use.⁹ 61% of UK households have at least one product stored and unused at home¹⁰ which highlights there is a significant amount of potential WEEE available to be collected from households and innovative collection methods could increase WEEE collection and recovery in the UK.

This trial sought to encourage customers who are already having a new product delivered or installed by Knowhow to return any unwanted/unused SHW back to the Knowhow Cardiff CSC with the delivery vehicle. The products collected were analysed and an assessment made on the potential for re-use and recycling.

⁵ The four other esap themes are 1. Extending product durability; 2. Minimising product returns; 3. Understanding and influencing consumer behaviour on product durability and reparability; and 4. Implementing profitable and resilient and resource efficient business models.

⁶ *Small Household WEEE (SHW) as well as small consumer electronics. Included Microwaves which are classified as Large Household Appliances under the WEEE Directive.*

⁷ <https://www.knowhow.com/>

⁸ <http://www.wrap.org.uk/sites/files/wrap/Switched%20on%20to%20Value%2012%202014.pdf>

⁹ *WRAP's Sustainable EEE Consumer Tracker - Survey of 2,186 people - Spring 2016*

¹⁰ *WRAP's Sustainable EEE Consumer Tracker "Do you have any of the following items stored at home which you do not currently use (e.g. in the garage, attic or a drawer)*

Aim of the trial

The project had 3 main objectives:

- Trial and evaluate the potential for collecting Small Household WEEE from Knowhow customers to increase re-use and recycling;
- Analyse the collected WEEE to evaluate re-use and recycling potential; and
- Assess impacts of replicability of WEEE collection trial across Knowhow's CSC's.

Key aspects in setting up the trial

The trial ran for a 6 week period between February and March 2016. The trial format was developed and agreed in collaboration with the Technical Director and WEEE and Recycling Process / Compliance Manager - UK and Ireland (Dixons Carphone) plus subsequent discussions with the Cardiff CSC team.

The Knowhow Cardiff CSC is one of 19 similar facilities that service regional areas across the UK including Northern Ireland and is responsible for product delivery and installation across specific geographical zones covering Hereford¹¹ to Machynlleth¹² (mid Wales).

At the beginning of the trial, a training and briefing session was given to the CSC delivery, installation and customer contact team as they are the key interface between the customer and delivery team. An important part of the project was to engage customers in the opportunity to return small household WEEE at point of delivery or installation.

¹¹ <http://visitherefordshire.co.uk/>

¹² <http://www.machynlleth.net/>

The customer contact team at the CSC asked each customer if they had any unwanted small electrical or electronic items they would like collected along with product type (e.g., kettle) when their new product was delivered. This information was provided to delivery drivers before collection who were also encouraged to ask customers at each household visit.

To facilitate the collection of SHW a collapsible Small Household WEEE box was added to each delivery load (except full loads due to space limitation).



Figure 1 Cardiff CSC Collected WEEE Palletised

The collected WEEE (Figure 1) was combined from each round and securely transported to S2S Group's secure operations plant and 'receipted' which provided an Auditable Asset Trail to evaluate for re-use, repair and recycling.

The consignment was unpacked, weighed and recorded on the S2S bespoke database - the 'decommission' stage of the process and subsequently evaluated for re-use, repair and recycling.

Data Capture Spreadsheet

To record and analyse the collected WEEE a 'Data Capture Spreadsheet' (DCS) was developed in MS Excel. This was used to input data on collected WEEE including product type, weight and age as well as

the physical characteristics of the products (a key factor in determining re-use potential and resale value). The products were subsequently manually disassembled into constituent material types and weighed.

'Third Man Day'

In order to understand first-hand the practical implications of collecting WEEE from customers' homes, a 'third-man day' was undertaken. This involved spending a day with the Knowhow installation team across 8 home visits.

Trial results

A total of 47 products were collected during this period weighing 285.72Kg. The weight of items collected during the 'third man day' which included 11 products (23% of total) totalled 53.5Kg, (19% of total weight).

All products collected were unsuitable for repair and re-use due to their physical condition e.g., missing or broken minor parts. All products were more than 5 years old and 40% over 15 years old. Product age has a significant impact on re-use potential and resale value, especially for small household domestic products. Therefore, all items were deemed beyond technical and economic repair.

The collected WEEE fell into 4 main WEEE categories (Figure 2) with 13 items (27%) in Large Household Appliances, 16 items (34%) in Consumer Equipment, 12 items (25%) in Small Household Appliances, and 6 items (13%) in IT and Telecoms. Although the focus was on small domestic appliances (SDA), microwaves were included in the trial, which fall into Category 1: Large Household Appliances.

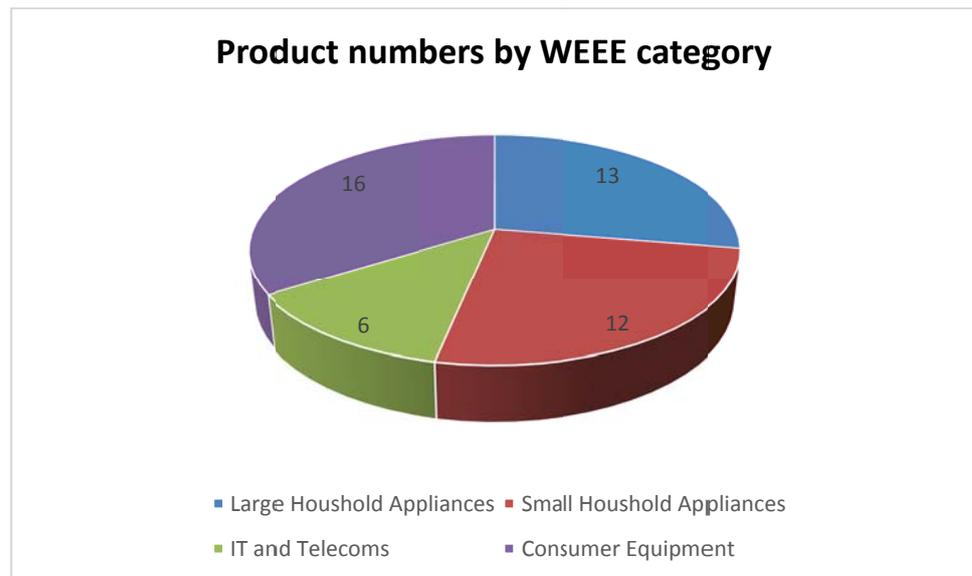


Figure 2 Product Numbers by WEEE Category

Just over 50% of the 285.72Kg WEEE collected by weight was Large Household Appliances (143.08Kg, 51%), with IT and Telecoms at 64.5Kg (22%), Consumer Equipment at 53.16Kg (17%), and Small Household Appliances at 24.98Kg (8%) (Figure 2).

The main materials by weight were steel which accounted for 113Kg (39%), plastic 70Kg (24%), PCBs (copper bearing) 45Kg (16%), Cable 25Kg (9%), Glass 20Kg (7%), PCBs Low Grade Boards 10Kg (3.5%), and Wood 2Kg (0.7%).

Overall, the trial didn't meet expectations in terms of the quantity and quality of WEEE collected. As a percentage of the average total household visits undertaken by the Cardiff CSC during the trial period the collected products represented one per 333 households visited with 0.69% of customers visited returning a product. By weight this is equivalent to 0.043Kg per household.

The additional stimulus from direct engagement ('third-man day') by the trial project manager¹³ resulted in 11 products collected (23% of the total), 53.5Kg (19% of total weight) which gives a significantly higher ratio of 1.37 products per household visited (6.7Kg per household).

¹³ Rob Holdway – Giraffe Innovation Ltd

The insights and results from the 'third-man day' highlighted the increased potential for product collections during installation visits. On the basis that 10% of CSC visits are product installations and using the 'third-man day' results it would be expected that the trial could have generated 2,310 products and 11.256 tonnes of small WEEE¹⁴. Across a year the Cardiff CSC would generate 27,720 products and 135 tonnes of WEEE via this route. **Across all 19 Knowhow CSCs this would be 526,680 products and 2,565 tonnes of WEEE.**

Conclusions

Overall, the trial showed that collecting Small Household WEEE from Knowhow customers presents a viable and convenient opportunity to take-back small WEEE from households for onward recycling. However, due to the generally poor condition and/or age (no resale value) of the products collected none of the products could be refurbished for re-use.

In summary, the following conclusions and observations can be drawn from the trial:

- The range and age of products returned is a positive indication that the trial engaged those people that responded to giving unwanted/unused/hoarded small household WEEE. These are products that could typically end up in household waste and ultimately landfill;
- Local geography including social aspects (e.g., wealth and size/location of home) has a direct impact on the likelihood of WEEE being collected;
- The collection of Small Household WEEE from Knowhow customers via the existing Knowhow 'installation' service is more viable and cost effective than during Knowhow product deliveries largely due to the amount of time spent at the customers home;
- The additional stimulus from direct engagement ('third-man day') resulted in a significantly higher ratio of products returned per household visited. This may indicate that the trial required more intervention and training of the CSC delivery and installation engineers to reinforce the

¹⁴ (1,680 installations*1.375products per visit and 6.7Kg per visit).

opportunity to collect SHW, particularly whilst on-site at the customer installation visit;

- Feedback from the Knowhow CSC team highlighted the integration of the collection method could be supported 'in-store' at point of purchase supported with marketing material (e.g., a small leaflet) which might stimulate customer awareness and increased returns.

Despite the relatively low product return rates and poor quality of products collected during the trial, the findings do indicate that the overall approach presents a convenient opportunity to take-back small WEEE from households for onward recycling and potential re-use.

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