

# Tackling contamination projects

## CASE STUDIES

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# Introduction

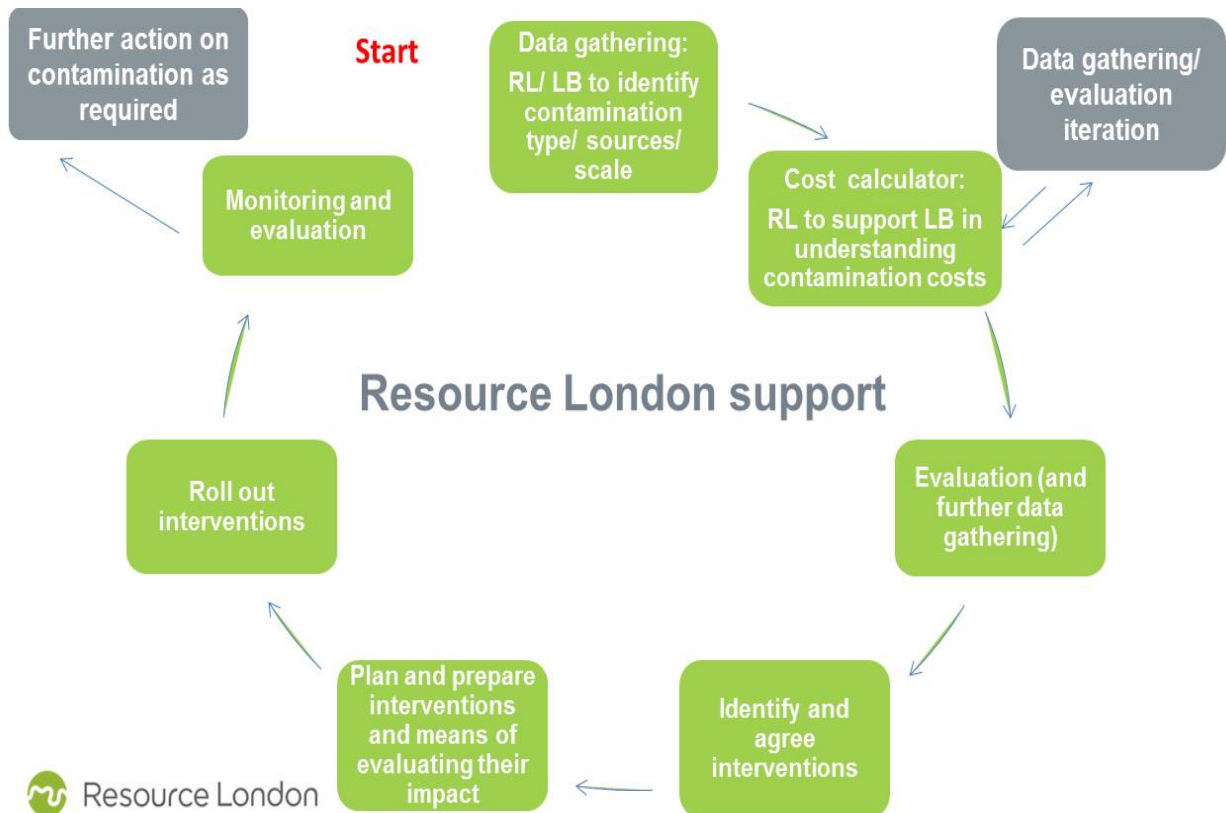
During 2017-2018, the London Waste and Recycling Board (LWARB), under the Resource London programme<sup>1</sup>, supported four boroughs on five pilots to reduce contamination in household recycling, both for kerbside properties and flats. This document contains the case studies for these pilots.

Please refer to the [project page](#) for a detailed project report, and for further information on other projects LWARB has run with the aim of reducing household recycling contamination.

## Project approach

Below is a diagram demonstrating the approach taken by Resource London for the Tackling Contamination projects.

**Diagram 1: Depiction of the project flow for the Tackling Contamination projects**



<sup>1</sup> Resource London was a London local authority support partnership programme by LWARB and WRAP. It ran for five years 2015-2020.

In order to understand why recycling was being contaminated, where in the borough it was prevalent and what the main “offending” items were, it was important to first conduct a service review. The participating London borough officers completed the [Cost of Contamination Toolkit](#), worked through a [service review template](#) to gather data on the household collection services, and completed a [communications self-assessment matrix](#). Resource London then met with the borough officers to draw out the main reasons for contamination in their collections.

Recycling composition sampling was conducted in all projects, on three collection cycles in a row, to set the baseline for the average contamination rate and type. The interventions were then designed based on all the evidence gathered and included a mixture of resident communications, crew interventions, crew training and policy changes.

Throughout the project, the Resource London project officers met with the pilot borough officers. The interventions were tweaked where necessary and all details recorded.

Post-intervention recycling composition sampling was carried out, following the same methodology as the pre-project sampling. Other monitoring measures were carried out, dependent on the project.

# I. ROYAL BOROUGH OF GREENWICH – KERBSIDE PROJECT

## I.1. Introduction

### I.1.1. The borough

The Royal Borough of Greenwich (Greenwich) is a unitary borough in south-east London. It lies along the River Thames and is bordered by the London boroughs of Lewisham and Bexley. The 2011 census recorded over 103,000 households, of which 38% are purpose-built flats, and a population of approximately 250,000. It is anticipated that these figures are now out of date, as a lot of new housing has been built in the area over the last nine years.

### I.1.2. The project

Greenwich had an ongoing issue with contamination in kerbside collections. They wanted to work with Resource London to better understand the reasons for this, as well as test interventions to reduce it. Initially, the plan was to run the project in two stages:

- I. Work with two rounds (with a third as a control round), bring the two rounds up to the same standard, ensure all residents had received recent communications, and run refresher training with the crews.
- II. Test further interventions to decrease contamination in one of the rounds, keeping the other round as a baseline and the control as a do-nothing option

However, as the first stage took longer than anticipated, we were unable to run a second stage of interventions. As you will see from the results below, the first stage had a good impact in reducing contamination.

## I.2. Service profile – kerbside collections

Greenwich operates a weekly recycling, mixed organics and residual waste collection – see table 1 below. Their operations are in-house, with recycling taken to Veolia’s materials recovery facility (MRF) in Southwark.

**Table 1: Kerbside collections in Greenwich**

	Materials	Container	Frequency
Recycling	Fully co-mingled	240l wheeled bin	Weekly
Food	Mixed organics	240l wheeled bin	Weekly
Garden			
Refuse		240l wheeled bin	Weekly

Greenwich double shift their collection vehicles, collecting recycling in the morning and residual waste in the afternoon.

### I.2.3. Contamination policy

Their kerbside recycling contamination policy was as follows:



1. Crews lift the lid of the recycling bin to check for contamination;
2. If they spot contamination, the bin is left unemptied, and a reusable tag is hooked onto the bin;
3. The crew member posts a card through the door of the household that contaminated, and informs the driver of the address, who then records it;
4. The refuse crew empty the contaminated bin into their vehicle, remove the reusable tag and bring it back to the depot.

### 1.3. Main findings from the service review

The main findings from the service review of issues that were thought to contribute to contamination in the kerbside recycling are set out as follows:

#### 1.3.4. Communications

The kerbside recycling bins had no visible signage, aside from an embossed “mixed recycling” stamp. This was thought to contribute to resident confusion over what could be put in the bin, as the resident was left to guess what could go in the bin.

The kerbside service leaflet was fairly dated. It contained no clear contamination message and was very wordy.

Textiles was found to be one of the most common contaminants in the kerbside bins. Residents can recycle these from the kerbside but are required to book a collection. This was thought to be causing confusion, with some residents assuming that textiles mixed in with their other recyclates would be sorted after collection.

#### 1.3.5. Crews

Although the crews were thought to be good at looking inside the recycling containers and tagging the contaminated bins, most were not then posting the contamination card through the letter boxes of the contaminating households. Therefore, there was no feedback loop to the householder, unless they happened to spot the hanger placed on their bin, before it was emptied as residual waste.

There were a few reasons cited for why the crews were not posting the cards into letter boxes:

- Crews are on task and finish – meaning they can finish work for the day, once they have collected their round. This negatively incentivises them to finish the round as soon as they can. Walking up and down paths to post cards may be seen as adding time to their round.
- The crews cited time pressure for returning the vehicles, to allow the next shift to start on time, due to the waste treatment plant closing by 20:00.
- Crew training on contamination was only held once per year.

#### 1.3.6. Contamination policy

As discussed earlier, the contamination policy was such that a bin hanger was left on a contaminated recycling bin, and then removed by the residual waste crew once they had emptied the bin. As most residents were not receiving a contrary card, it is likely they did not know they had contaminated, unless they had spotted the reusable bin hanger. This means there was no reason for them to change their behaviour, as they would assume that the items wrongly placed in their bin could indeed be recycled. Or, alternatively they may have been using their recycling bin as an extra residual waste bin, knowing there would be no consequence.

Another issue with the existing contamination policy was that the crews needed to call out to the driver to record the address by hand. This means there was a high risk of poor data collection e.g., if the driver did not hear or was too busy to note down the address.

#### 1.3.7. Materials handling

The review highlighted good practice at the waste transfer station (WTS) and the MRF.

The recyclates are tipped at Greenwich's WTS in their borough. A staff member inspects the materials and picks out any obvious contamination, if it is safe to do so. The load is scored on quality of recycling, which means there is a good record of which rounds contaminate the most. This is useful information to be able to target efforts.

Greenwich's material is then transferred to Veolia's MRF in Southwark, where it is kept in a separate bay to other customers. This means there is little danger of cross-contamination.

#### 1.3.8. Pre-monitoring data

The Council chose two rounds on which to run the interventions, and one comparable control round. We then carried out the additional MRF sampling to identify the most common contaminants. These were the top four in order:

- 1 Food waste
- 2 Low density polyethylene (LDPE) i.e., plastic bags
- 3 Plastic film (non-LDPE)
- 4 Textiles

The recycling sampling is categorised by Veolia as

- Desirable – these are the items the MRF can accept under Greenwich's contract for sorting and onward recycling.
- Non-desirable – these are items that are not accepted under the current contract, and may not be separated in the MRF, but could technically be recycled. Items such as carrier bags or textiles.
- Non-recyclable – these are items that are not recyclable, such as nappies, food waste or black sacks filled with waste. These materials are sent for onward treatment, such as energy from waste or landfill.
- Fines – these particles are too small to go through the MRF and may contain grit or pieces of recyclates that have broken down into small fragments. They are sent for onward treatments in various places.

Crew sheets with contamination records were reviewed for the pilot rounds, to capture the average number of contamination incidences, pre-intervention. The Council also looked at recycling tonnages for the rounds.

## 1.4. Interventions

Two pilot rounds were chosen by the Council, with a third acting as the control. All interventions were applied to the two rounds, with the control continuing as usual. All monitoring and evaluation activities were conducted over the three rounds



### 1.4.1. Communications

We designed a new kerbside service leaflet, with an emphasis on contamination, which was *London recycles* branded. We also designed a weatherproof instructional bin sticker, with the same branding as the leaflet (image 1). The leaflet also contained clear instructions on how to book a textiles collection.

The Council paid overtime to crews to distribute the leaflet and stick the new bin stickers on each bin in the two pilot rounds. We ensured the tops of the bins were wiped down and dried before being stickered.

**Image 1: new kerbside recycling bin sticker**



### 1.4.2. Improved contamination policy

The Council agreed to pilot a new contamination policy with a feedback mechanism to residents. A new single-use bin tag was designed, with a clear contamination message, see image 2. The crews were instructed to secure the bin tag on the handle of the contaminated container, which would then remain after the refuse crew had emptied the bin.

**Image two: New contamination tag**



The new contamination policy also included a series of follow up letters to the household, using a four-stage process:

Stage one – a friendly letter informing the household that unwanted items had been spotted in their recycling bin, with a reminder of what they can recycle.

Stage two – a more serious tone was used in a letter, with reminders of the consequences of contamination entering the recycle.

Stage three – this letter contained a warning that their recycling bin could be removed if they continued to contaminate their recycling. This was followed up by household visits from the recycling team

Stage four -bin removal. The householder was invited to request clear sacks for recycling and would have their bin reinstated if they were seen to stop contaminating.

From the follow-up household visits in stage three, officers identified several language barriers. They had the letters translated into the three main languages, to support the project.

#### 1.4.3. Crew training

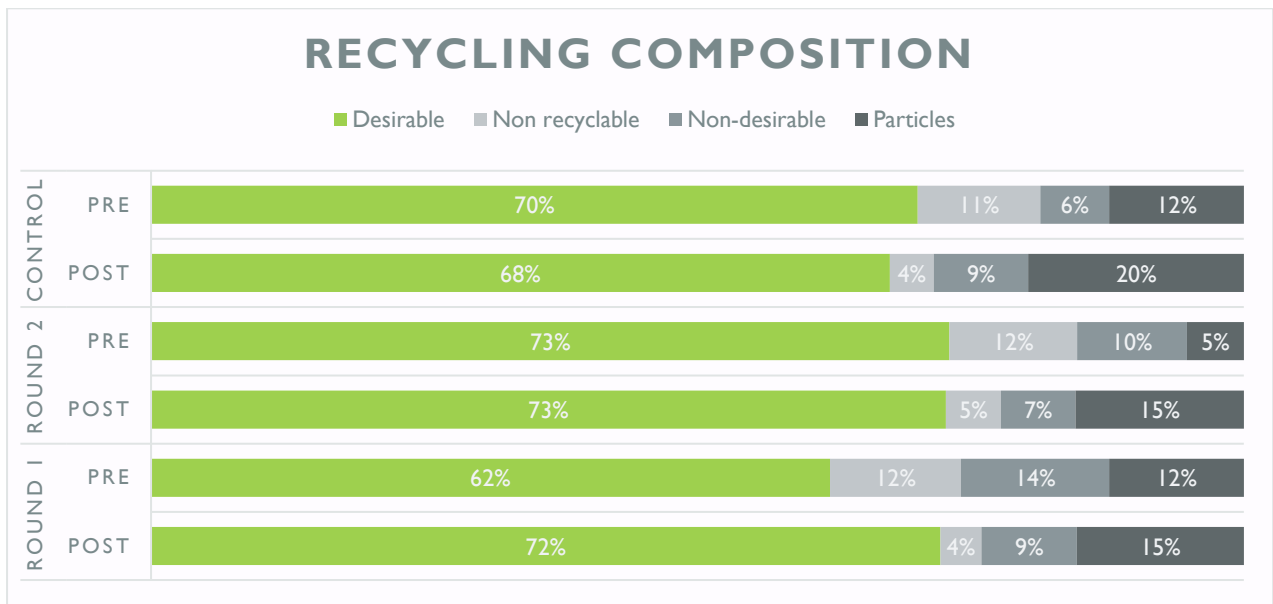
Crew training on spotting contamination, and the new contamination policy, was provided. Supervisors and the recycling team also carried out spot checks. They found that the two crews were not operating in the same way, when it came to decision-making for rejecting bins. This led to the recycling team providing pictorial guidance as to what constituted a contaminated bin for rejection. They agreed a level of contamination with their contract manager, to ensure good quality recycling was not being left behind e.g., because of one crisp packet.

## 1.5. Results

The pre- and post-monitoring data samples were measured approximately one year apart.

There was a significant reduction in non-recyclable items and a significant increase in target materials in both rounds – see Graph One below. Round 1 had the biggest improvement. Feedback from council officers is that the crew from Round 1 was more engaged with tackling contamination than that on Round 2. From the graph below, it would seem there was no improvement in the desirable materials in Round 2. However, the non-recyclable and non-target materials greatly reduced, which met the project objectives.

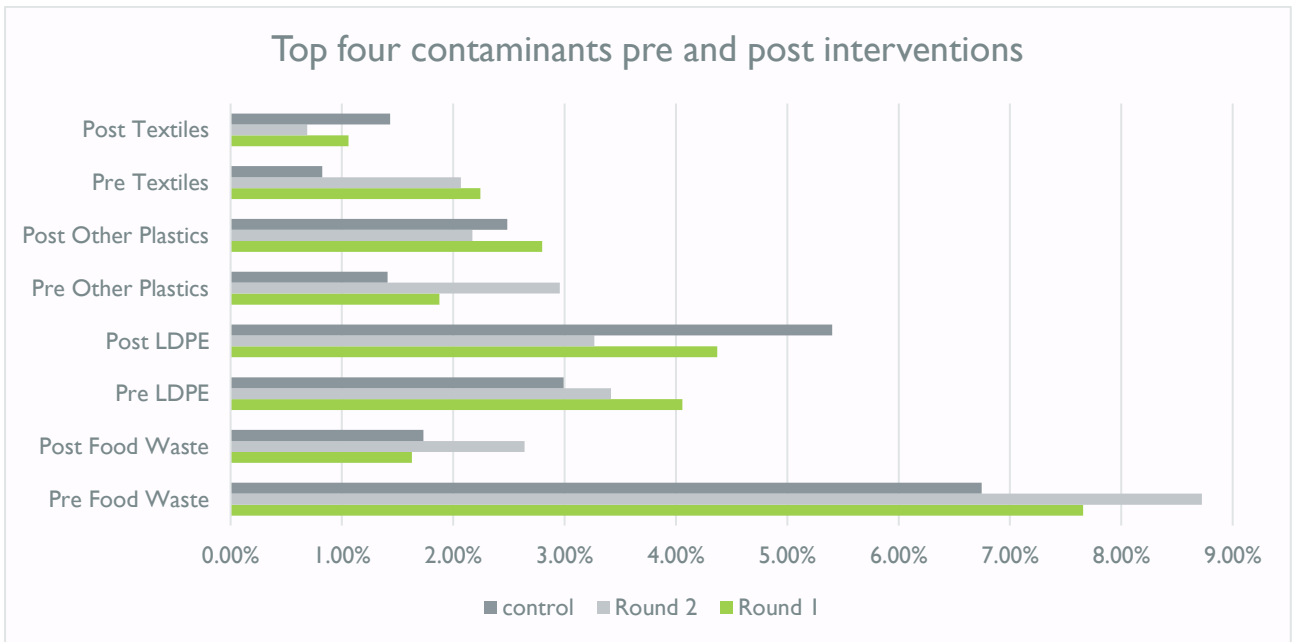
**Graph 1: Kerbside sampling results from pre- and post-interventions in Greenwich**



Non-recyclable items in the control round also went down, but crews were aware when sampling was taking place, so were thought to be more vigilant in checking bins. This supports the theory that the crews are an asset for preventing contamination entering the recycling stream.

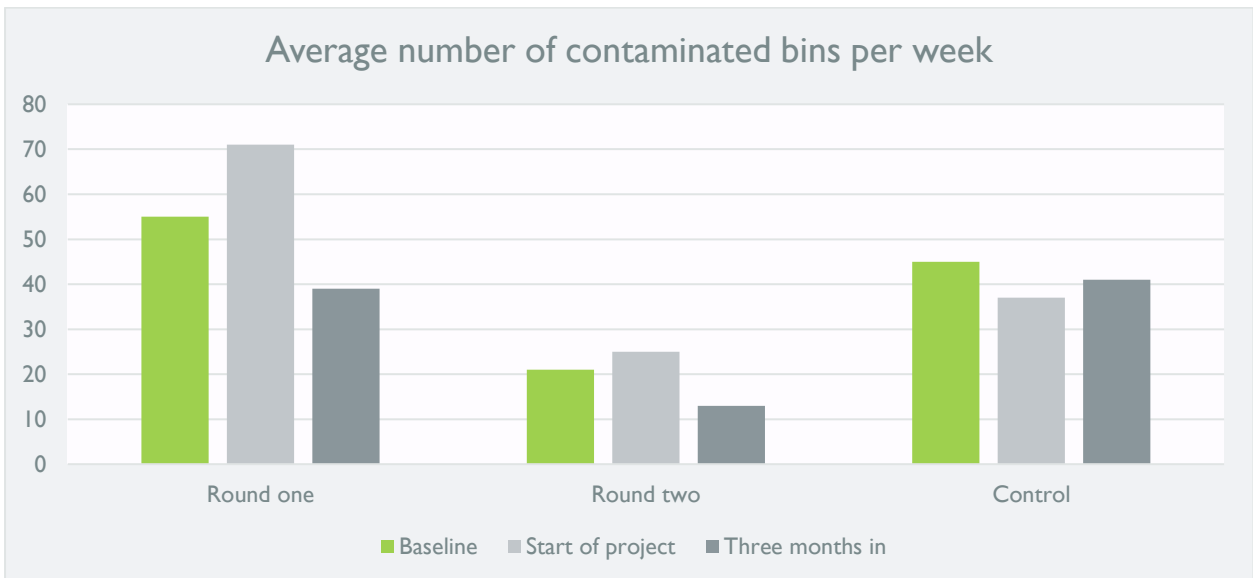
Graph 2 below contains detail on the top four contaminants in Greenwich's kerbside recycling, as obtained from the pre-monitoring data. We can see from this, that both food waste and textiles in the recycling stream dropped significantly. However, there is still some confusion over acceptable plastics.

**Graph 2: Top four contaminants in Greenwich’s kerbside services, by percentage of weight, pre and post-interventions**



Graph 3 below contains the average number of contaminated recycling bins for the period before the interventions ran, at the start of the project, and three months into the project. As to be expected, there was an initial uplift in recycling containers identified due to the extra crew training. However, this then fell back to below the pre-project levels, demonstrating the impact of the feedback mechanism.

**Graph 3: Average number of contaminated kerbside recycling bins per week**



## 1.6. Lessons learned

The combination of improved communications and the new contamination policy had a positive impact on reducing contamination. Council officers felt the reusable contamination tags were a good communications tool. However, this relied on crews delivering them effectively and consistently.

### 1.6.1. Main learning points

- Good, clear communications with consistent messaging is key to ensuring residents understand what can and cannot be recycled. It is helpful to explain what the negative consequences are of putting wrong items in the bin, so they fully understand the importance of getting it right.
- When introducing a feedback mechanism with a series of letters, ensure you have enough back-office support for:
  - inputting addresses of contaminating households into a database, to help ensure you are sending out the correct stage letter; and
  - writing the letters and sending them out.
- The feedback mechanism, in the form of reusable tags and follow-up letters, helps to drive the contamination message, and led to significant behaviour change.
- Crews are a good asset to ensure contamination does not enter the recycling stream. Ensure you spend time on contamination training, with periodic refreshers.
- Ensure your crews fully understand what constitutes a contaminated container. This will depend on your contracts. You may decide that one crisp packet or one piece of plastic film among good quality recyclate is acceptable.

### 1.6.2. Further feedback from Greenwich officers

- The operational system used by Greenwich Street Services in this project was felt to be cumbersome, as it was paper-based. Assistance was required from the Council's property/ GIS team to clarify property numbers on the selected rounds (previous in-house counts led to discrepancies). The lack of in-cab technology was felt to be a large barrier as it did not provide real-time reporting and was prone to human error. However, the Council has since installed in-cab technology and had the internal go ahead to amend their contamination policy and implement borough-wide.
- Further crew training was required around identifying contamination. It was discovered that different crews had different perceptions of what a contaminated bin was and when they should reject a bin.
- The prevalence of unlicensed HMOs was found to be significant and encouraged the team to establish more robust intelligence-sharing links with the Council team that leads on this.
- The regular on-the-ground monitoring of the pilot area also highlighted other issues, such as waste nuisance (residual waste in gardens, people using other residents' bins) and enabled referrals to the Council's enforcement team.

## 2. ROYAL BOROUGH OF GREENWICH – FLATS PROJECT

We also ran a project with Greenwich to tackle contamination on an estate with 41 privately-managed blocks of flats, and a couple of estates with 57 Council-managed blocks of flats.

Please see the previous case study for the demographics in Greenwich.

### 2.1. Service profile, purpose-built flats

Greenwich provides co-mingled recycling collections to all blocks of flats. They have a policy to provide a food waste service as standard to all new build flats, as well as WEEE and textile collections. Where there is space, the older housing stock have WEEE and textile banks on site. However, many of the older housing stock did not have food waste collections at the time of this project. See table 2 for the service profile from purpose-built flats.

**Table 2: Collections from purpose-built flats in Greenwich**

	Materials	Container	Frequency
Recycling	Fully co-mingled WEEE Textiles	1100l Eurobin WEEE bin Textile bin	Weekly
Food (to new build only)	Separate	660l	Weekly
Garden	None	N/A	N/A
Refuse		Either 1100l Eurobins or 940l chamberlains	At least weekly (depending on the site)

Communal recycling bins on most of the Council estates are located around the estate. Residual waste is either deposited in chutes, using chamberlains, or directly into 1100 litre Eurobins. The communal bins at the private blocks of flats were all located in various locations in the basement of the buildings. Often in separate rooms, in the car park area.

#### 2.1.1. Collections

Collections from the Council-managed flats took place directly from where the bins were located on the estates; either in bin rooms or on-site locations. However, collections from the privately-managed estate in this project took place from one central location. Caretakers brought the recycling, residual waste and food waste bins to a central point using specialised vehicles to pull the bins. The estate managers kept a supply of empty containers to swap over the bins in some of the locations, so that residents are never left without any bins.



### 2.1.2. Contamination policy

Contaminated communal recycling bins were left for the refuse crew to empty. The apertures were being taped over by the recycling crew, to indicate to residents not to use the bin. However, it was reported back that residents often used to break the tape off in order to put their recycling in, or they dumped recycling around the bin. The Council recently changed to using bin hangers instead.

There was no other feedback mechanism to residents in flats about contamination. However, the waste and street advisers conducted some door knocking on the most problematic estates to try and improve use of the recycling bins.

## 2.2. Main findings from the service review

The main findings from the service review, that were thought to contribute to contamination in the communal recycling stream are set out as follows:

### 2.2.1. Condition of the bins and bin sites

Council staff had not visited the bin areas in the Council-managed blocks for a long time. They had no idea what condition the bins were in, if there were enough on site, whether the signage was still legible etc. Therefore, one of the first stages in this project was to carry out site inventories.

During the site inventories, officers recorded:

- The number and size of recycling, residual and food waste containers at each location on the estates;
- The condition of these bins;
- The presence and condition of signage;
- Location of bins, including proximity to main entrance of the block;
- If there were more suitable locations;
- Condition of bin store or bin area;
- If there was a caretaker present:
- Where the noticeboards were; and
- Any more useful information about the estate

The outcome from the inventory was that most of the recycling bins on the Council-managed estates needed improvement, with unclear signage, chipped paint etc. However, the bins in the private blocks were in far better condition, mostly because they were fairly new and were kept inside.

### 2.2.2. Communications

As with the kerbside leaflet, the service leaflet for residents living in flats was outdated and no communications had been delivered for a long time.

There were no posters up around the estates about recycling, and limited signage at the recycling sites.

Most of the communal recycling bins were found to have old artwork on the bins, which was also faded. It was not clear what the user should be putting into the container, which will have contributed to contamination.

### 2.2.3. Contamination

The average contamination rate in the pilot areas was 29%. Unfortunately, the pre-project sampling did not separate samples from the privately-managed blocks, to compare with the Council managed blocks.

The top 4 contaminants, by weight, were like that of kerbside:

1. Food waste
2. Textiles
3. Other plastics
4. LDPE film (plastic bags)

## 2.3. Interventions

### 2.3.1. Site improvements

The first step in the project was to bring all the recycling bins up to an agreed standard. It's worth noting that this project pre-dates Resource London's project [Making Recycling Work for People in Flats](#)

The interventions found some containers were in a very poor state. These with either repaired or replaced. All bin signage was brought up to date (see images 3 and 4) and officers ensured enough bins were provided. Images 3 and 4: Communal recycling bin before and after the flats inventory and improvements



### 2.3.2. Communications

As with the kerbside project, a new flats service leaflet was produced for the Council with the *London recycles* branding. We created two leaflets – one for flats with food waste collections and one for those without. The leaflet was distributed to all flats, with a covering letter that informed residents of the improvements to their recycling sites with an emphasis on recycling quality.

Posters were designed to match the leaflets and posted, where allowed, on internal noticeboards (image 5). However due to fire regulations, the Council-managed blocks were unable to host any internal posters.

Image 5: Flats recycling poster for internal noticeboards



The recycling team ran a few recycling roadshows, where possible close to the estates where the project was being run. These were positively received by residents.

The recycling team liaised closely with the managing agent at the private flats. The managing agent agreed to email tenants, reminding them about recycling. The recycling team met with the on-site staff to discuss the issue of contamination and found them to be fully engaged with the project.

### 2.3.3. Contamination policy

A new contamination policy was piloted.

- Contaminated containers were sealed shut with a sticker to prevent further use (Image Six).
- The refuse collection crews then peeled these off when they emptied the container.
- The recycling team were informed of the block of flats that had contaminated, and each household received a friendly worded letter, reminding them how to recycle correctly.
- If a block contaminated for a second time, a second letter was sent, with stronger wording alluding to their rental agreement, which contains a clause about utilising waste and recycling bins correctly.

Very early on in the project, the Council found it was very expensive to post letters to all households about their recycling bins, as these were large blocks of flats. Their solution was to hand-deliver the letters, using resources from the recycling team. They also reduced the frequency of feeding back to householders due to the intense resourcing required. Initially, the plan was to feed back every time, but this was reduced to every second occurrence.

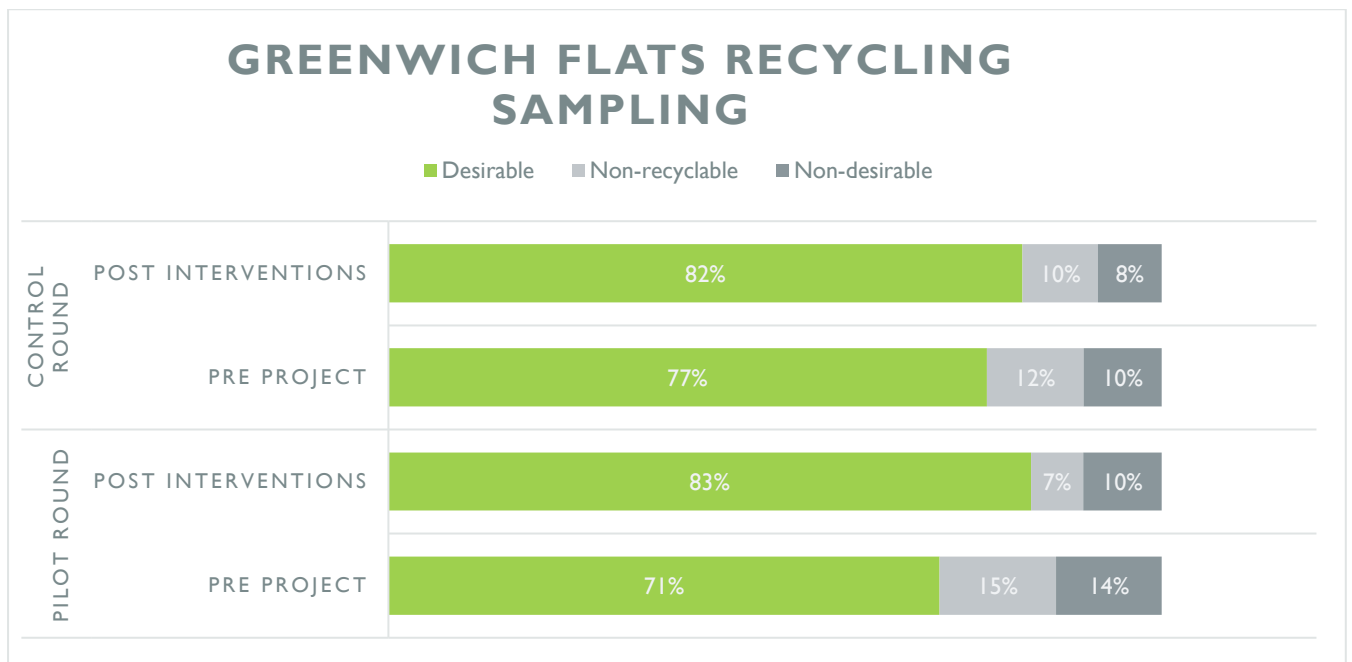
**Image 6: Design of contamination tape used to seal shut contaminated bins**



## 2.4. Results

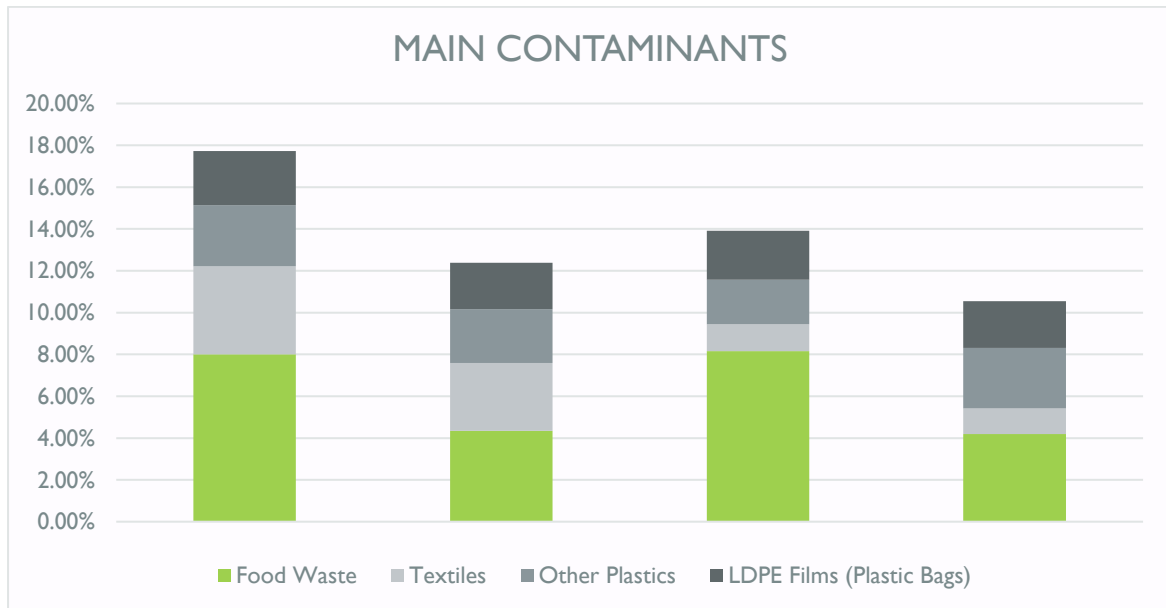
Overall, contamination reduced by 41% (by weight) from 29% down to 17% in the pilot area- see graph 4. Unfortunately, the pre- project sampling for the private vs Council- managed flats was not separated, although we were able to do this for the post-project sampling. It would have been interesting to understand how residents in the managed flats reacted to the contamination messaging compared to the Council flats, where they have a different relationship with management.

**Graph 4 – Recycling composition sampling from flats in Greenwich**



The main contaminants went down in both the pilot and control rounds (graph 5). However, the drop was more significant in the pilot round.

Food waste in the pilot flats went down by 46% (by weight) and textiles reduced by 23% (by weight).

**Graph 5 – Main contaminants from flats in Greenwich**

The project highlighted to the Council the need to visit their estates, to ensure the bins are in good condition, in the right location and have not been vandalised.

Running a feedback mechanism to residents in flats was found to be resource intensive, and the Council will no longer be using this methodology.

## 2.5. Lessons learned

### 2.5.1. Main learning points

- It is likely that the improvements to the recycling bins and the new leaflet, along with the letter, had the biggest impact on ensuring residents recycled correctly. This proved to the Council the importance of regularly checking on the condition of the containers.
- The contamination feedback mechanism tested in this project was too resource intensive, as bins were being contaminated most weeks. As officers were not always able to associate one block of flats with a recycling bin on an estate, all households had to be written to. This is not practical on a regular basis.

### 2.5.2. Further feedback from Greenwich officers

The recycling team felt the project helped to develop a good working relationship with the managing agent on the privately managed estate, which did not exist prior to this project. By developing this relationship, they were able to reinstate food waste collections on sites where the service had been removed.

They also found that engaging with residents in flats can be challenging and will start using their social media channels and resident portals more frequently in order to get their recycling messages across.





## 3. WESTMINSTER CITY COUNCIL - FLATS PROJECT

### 3.1. Introduction

#### 3.1.1. The borough

The City of Westminster is an inner London borough in central London. It lies on the north bank of the River Thames and borders with the London boroughs of Brent, Camden, Royal Borough of Kensington and Chelsea and the City of London. The 2011 ONS census data recorded a total population of over 219,000 living in over 118,000 households of which 66% are purpose-built flats. It is likely that these numbers have risen since then, as this data is now 9 years old. However, it is anticipated that the proportion of housing types as purpose-built flats will still be high, (if not higher) due to the amount of new builds in the borough.

#### 3.1.2. The project

WCC wanted to understand how they could further reduce contamination at their purpose-built blocks of flats. They had already worked hard to reduce contamination from 19% down to 12% borough-wide but were aware there were still issues at flats. LWARB agreed to run a tackling contamination pilot to ascertain any issues that could be causing contamination at these flats. Please note, this project predates Resource London's project [Making Recycling Work for People in Flats](#), which led to a decrease in contamination on estates across London.

We ran the project on WCC managed housing estates (with purpose-built blocks of flats) on one round covering approximately 7,100 households. The round was split, with interventions run on 4,340 households with the remaining 2,850 as the control.

### 3.2. Service profile

Westminster City Council (WCC) is a unitary authority with domestic and commercial collections and disposal contracted to Veolia Environmental. Table 3 contains detailed information of the collection service profile, including materials, containers and frequency.

**Table 3: Waste management service profile for purpose- built flats in Westminster**

	Materials	Container	Frequency
Recycling	Fully co-mingled Textiles (on selected estates)	1100l Eurobin Textile bin	At least weekly (site dependant)
Food waste – currently being piloted on a few estates	Separate	180l bin in housing unit	At least weekly (site dependant)
Garden	None	N/A	N/A
Refuse		Chutes into Chamberlains or 1280l bins around the estate	2-3 times per week (site dependant)

Most purpose-built flats in Westminster have chutes for refuse disposal. Residents living on the ground floor are required to use communal rubbish bins.

#### 3.2.1. Contamination policy

The recycling collection crew always check to see if the recycling bin is contaminated. If it is, they tag the container and report this back in real time. The refuse crew then empty the container and remove the tag.

### 3.3. Main findings from the service review

#### 3.3.1. Previous interventions

Previous interventions WCC had carried out to increase recycling and decrease contamination on their housing estates (with purpose-built flats) included:

- Providing residents with reusable bags to store their recycling and to carry the materials to the communal recycling bins;
- Ensuring recycling bins are in the optimum location for residents;
- Changing the recycling bin lids to slam-locked lids. Previous lids required a physical lock, and there was a spate of these being stolen. The slam-locked lids do not require this kind of lock, so were intended to save the council money. Lids left unlocked are open to abuse, with users dumping large items, or bags of rubbish inside (which is often a cause of contamination); and
- New signage had been placed up at their recycling sites, as funded through a previous LWARB flats fund (circa 2010)

#### 3.3.2. Condition of the bins and bin sites

WCC officers carried out inventories of the pilot estates. Most of the recycling bins on these estates were in good condition. WCC runs a six-monthly bin maintenance programme, which ensures the bins are kept in good condition.

As mentioned earlier, all the estates had recycling location signage, which was still in date.

During the inventories, officers observed ground floor residents using the recycling bins to dispose of their refuse. This was thought to be due to these residents not having access to chutes (as per the other floors) and the recycling bin was the only visible bin on site. The refuse bins were behind a closed door, with no signage.

#### 3.3.3. Communications

The communications review highlighted that although WCC's estates recycling service leaflet was clear on what to recycle, it did not contain a strong enough message on what not to recycle. We identified that the leaflet could also benefit from pictorial information, to help communicate with the many different languages spoken by WCC's residents.

#### 3.3.4. Crews

Officer and supervisor observations highlighted that the crews were not always ensuring that the recycling bin lids had fully slammed shut. This was likely to be leading to abuse of the bins, as residents and others could easily lift the lid and dispose of waste or bulky items.

#### 3.3.5. Contamination policy

Although they had a good policy in place, and contaminated bins were cleared quickly, it was felt the tags were ineffectual in preventing residents from using the bins in between identification and emptying. Therefore, good quality recycle had the potential on being lost to the refuse stream.

#### 3.3.6. Main contaminants

Recycling from the test round (pilot and control households) was sampled for three weeks in a row, to get a good average of the composition. As the recycling was collected twice a week, we ran six pre-project sampling activities. The most common contaminants identified by WCC were:

1. Food waste
2. Textiles,
3. Other plastics
4. Kitchenware (saucepans etc.)

### 3.4. Interventions

A package of interventions was piloted on the estates.

#### 3.4.1. Communications

The estates recycling service leaflet was refreshed, bringing it more in line with *London recycles* branding and the main contaminants were included as pictures, to highlight what not to put in the bin. See image 7 for this specific page. Note that it included the four main contaminants found from the recycling composition sampling.

“Rubbish bin room” signage was displayed on the external doors on estates where this was missing.

WCC arranged for all the households in the pilot area to be visited by a door knocking team who delivered the new service leaflet, plus a covering letter to the ground floor residents only, reminding them how to dispose of their refuse correctly. The team focused their discussions with residents on how to recycle correctly, with additional emphasis for the ground floor residents on how to dispose of waste.

All the recycling bins had a “no food waste” sticker added on the top of the bin (image 8). This has proved to be effective in driving up food waste recycling on kerbside bins, this was the first time testing on communal recycling bins to drive down contamination.

Image 7: Extract from WCC estates service leaflet, relating to contamination



Image 8: No food waste sticker, applied to the recycling bins on the pilot estates



3.4.2. Contamination policy

Considering the crew’s feedback on the contamination tags, a new contamination sticker was designed, which was used to seal up the aperture and clearly indicate to residents not to use the bin until it had been cleared (image 9). The use of a bright yellow sticker was new to the Council and therefore should have been eye-catching to residents.

Image 9: Contamination bin sticker for communal recycling bins

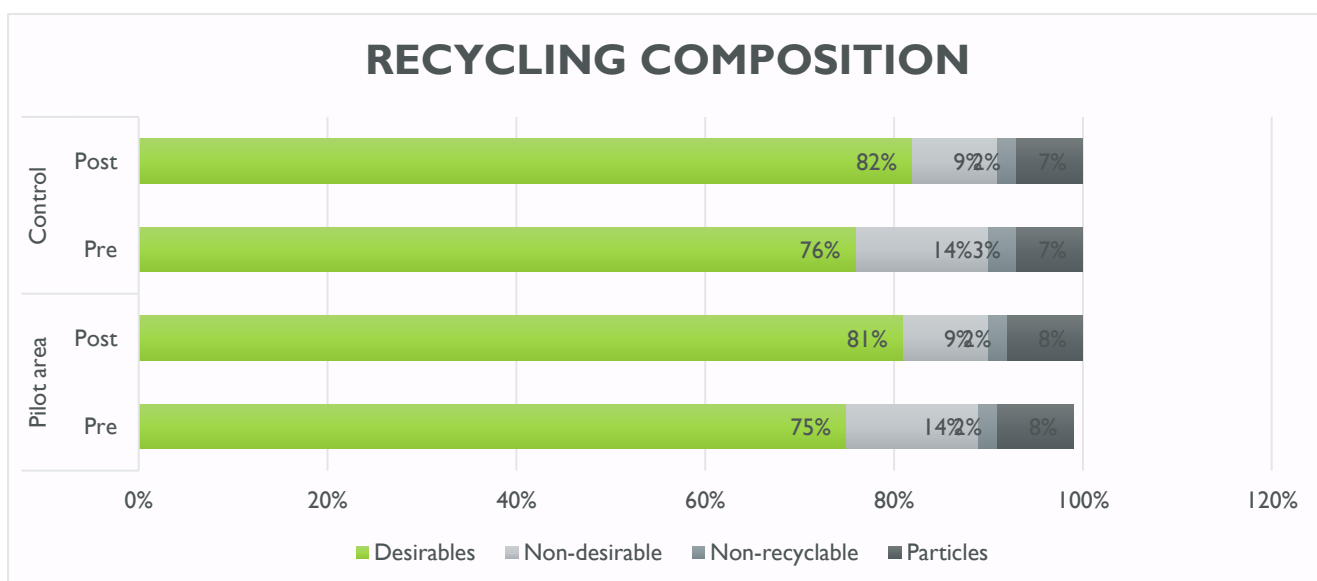


### 3.5. Results

Both the pilot area and the control had a significant drop in contamination. The pilot reduced from 15% to 10% and the control from 14% to 10% (not including particles). As the crews knew when the sampling was taking place, it is thought they were being extra vigilant on the control round with checking inside the recycling bins, and rejecting more at the point of collection. This proved that crews can be a good tool for preventing contamination from entering the recycling stream if they are carrying out the contamination policy correctly on a regular basis.

Graph 6 contains the results from the recycling composition sampling from the pilot and control estates in WCC. *The Council did not include particles within their contamination when reporting on this project.*

**Graph 6: Results from recycling composition sampling**



The crews were pleased with the change to the contamination stickers (from tags) which made it quicker for them to report contaminated bins. It is thought that because tagging the containers slowed down collections, crews may have been collecting contaminated bins, and so, WCC officers felt the timesaving contributed to an increase in the number of containers reported as contaminated. The Council subsequently adopted the new contamination stickers across the whole round and have since fed back that the number of reported incidences went up for the entire round.

The door knocking exercise had a contact rate of over 30%, which is very good for flats.

### 3.6. Lessons learned

- Although WCC are reasonably good at visiting their estates regularly, this was mostly to check on the recycling bins. This project was the first time they had included the refuse infrastructure.
- Many of the rubbish bin rooms on the estates were not in good condition, and therefore off-putting for residents to use. The management of these was down to the Council's housing management organisation, which was going through a significant re-structure at the time of this project. As such, improvements to the rubbish-bin rooms could not be made at this time, and it was difficult to engage with the right person. Contamination may have fallen



even more if there had been improvements to the rubbish-bin rooms, as residents would have felt more comfortable using them.

- The additional recycling composition sampling was felt to provide very useful insights. The team will be using this information to target the main contaminants in future.

## 4. WALTHAM FOREST COUNCIL - KERBSIDE PROJECT

### 4.1. Introduction

#### 4.1.1. The borough

The London Borough of Waltham Forest is an outer-London borough in North-East London. It is bordered by the London boroughs of Enfield, Haringey, Hackney, Newham and Redbridge, as well as the county of Essex. Waltham Forest Council is a waste collection authority and is one of seven London boroughs whose waste is disposed of by the North London Waste Authority (NLWA). The 2011 census recorded just under 100,000 households, of which 27% are within purpose-built flats, and a population of approximately 260,000.

#### 4.1.2. The project

Waltham Forest found that contamination in their household recycling was having a significant financial burden and notable impact on their recycling rate. The enforcement of the MRF Code of Practice<sup>2</sup> doubled the average rate of rejection, leading to a fall in the recycling rate in 2015/16 of 6.7% points<sup>3</sup>. Whole loads were being rejected by their MRF on a regular basis.

The Council introduced a new contamination policy with a feedback mechanism to residents. However, they wanted to test a targeted campaign to reduce the main contaminants of food waste and textiles.

Various studies have indicated that one of the barriers preventing residents from recycling correctly is the high volume of detail provided to them in one go, and that residents would prefer to receive information about one material at a time, rather than receive general information about recycling. Resource London devised a “back to basics” idea of communicating to residents, which focussed on one type of material at a time, with the aim of simplifying the process for residents. This approach was piloted successfully in the London Borough of Newham (Newham Council - kerbside project).

The approach, adopted in Waltham Forest for this project, covered three kerbside recycling rounds, each of which received a material-specific communications message, and a control round which received no messaging.

### 4.2. Service profile

Waltham Forest’s kerbside collection consists of a weekly residual collection, a weekly co-mingled recycling service, and a fortnightly mixed organics waste service (see Table 4).

At the time of this project, their kerbside collections were operated by Kier<sup>4</sup> and their recycling was treated at the Biffa MRF in Edmonton, under the NLWA contract.

<sup>2</sup> <https://www.legislation.gov.uk/uksi/2014/255/schedule/made>

<sup>3</sup> As identified by the Council

<sup>4</sup> The Council has since gone in-house

**Table 4: Waltham Forest Council's kerbside collection service profile**

	Materials	Container	Frequency
Recycling	Fully co-mingled	240l wheeled bin	Weekly
Garden	Mixed organics	240l wheeled bin	Fortnightly
Food			
Refuse		240l wheeled bin	Weekly

### 4.3. Main findings from the service review

Resource London conducted a thorough review of the Council's contamination issues. This included a MRF visit and meetings with officers to discuss the problem. An analysis of rejected loads, and numbers of contamination-incident stickers issued by crews, was carried out with the Council. The rounds data showed clear trends that could be grouped into four areas:

1. The highest-ranking rounds for rejection at the MRF, but low numbers of reported bin incidents, suggested improving crew training would be the most effective method to reduce rejected loads (group A).
2. Rounds where there were high levels of contamination reported, but still had significant levels of rejection, suggested that resident interventions would be more effective (group B).
3. Rounds where no clear relationship between reported contamination incidents and number of rejected loads were observed (group C).
4. Low-ranking rounds which indicated good contamination reporting by crew members and which generally had the lowest rejection levels (group D).

Four rounds in group B were identified as having high levels of contamination reported by crews yet still significant levels of rejection at the MRF, suggesting that resident interventions would be most effective.

## 4.4. Interventions

Four rounds were chosen, with one as the control. Table 5 sets out the messaging received by the three pilot rounds. The aim of the project was to divert food waste out of recycling and into the mixed organics bin, and textiles out of the recycling bin and into the textile bring banks.

We chose to test communicating one material at one time on two of the rounds and combining two messages on the third round. Communicating about food waste and textiles together was not seen as advisable by our communications experts. However, with recycling collections, these are the two most common materials (by weight) that end up incorrectly in the recycling stream, and so it was deemed useful to test communicating about both on one round.

Stickers with the specific messaging were placed on bins – depending on the material – and matching postcards, with more detail, were posted through the doors. An external contractor was employed to sticker all the bins and deliver the postcards.

**Table 5: Description of the messages tested in Waltham Forest**

Round	Material	Main message
Round 1	Food waste	NO – to food waste in recycling NO – to food waste in the residual bin YES – to food waste in the mixed organics bin
Round 2	Textiles	NO – to textiles in recycling NO – to textiles in the residual bin NO – to textiles in the mixed organics bin With instructions to take them to the nearest textile bin
Round 3	Food waste and textiles	NO – to food waste and textiles in recycling NO – to food waste and textiles in the residual bin YES – to food waste in the mixed organics bin NO – to textiles in the mixed organics bin With instructions to take them to the nearest textile bin

### 4.4.1. Communications materials

#### *No food waste*

Image 10 shows the sticker that was used on both the recycling and residual waste bins in Waltham Forest for no food waste. Image 11 is the “yes” sticker, stuck on all the organic waste bins.

#### **Images 10 and 11: Bin stickers used on round 1 – food waste**



Image 12 is the simple post card, which was posted through the doors on round 1. The flip side of this postcard had the “no food” picture as seen in image 10.

**Image 12: No food waste postcard used in round 1**



### *No textiles*

Image 13 is the “no textiles” sticker, stuck on every wheeled bin on round 2. Image 14 shows the messaging on the postcard, delivered to all households on this round, with the reverse matching the “no textiles” sticker. The images of the textile banks reflected those used in the borough.

**Images 13 and 14: Bin sticker and postcard used on round 2 – textiles**



### *No textiles and no food*

This was the slightly trickier messaging to get across in a simple way. All the residual waste bins and recycling bins in round 3 were stickered with the “no food or textiles” sticker as seen in image 15. The organics bin was stickered with a “yes food waste, no textiles” sticker as seen in image 16. Although the organics waste was not being contaminated with textiles, we couldn’t have no textiles on only 2/3 of the bins.

The postcard delivered to round 3 (image 17) contained positive messaging with “yes” to food in organics and “yes” to textiles in the bring banks. The flip side used image 15.

Images 15 and 16: bin stickers used in round 3

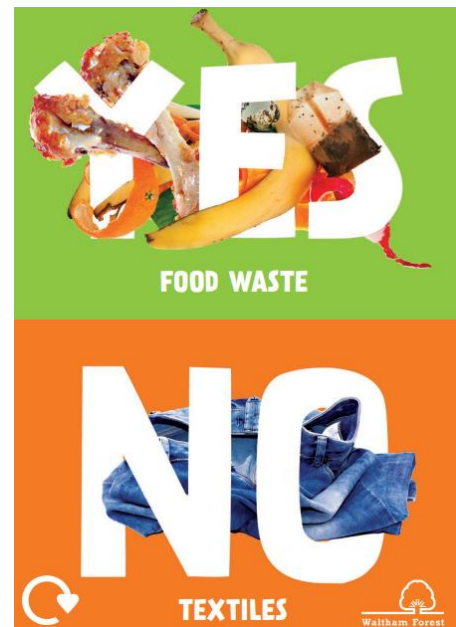


Image 17: postcard delivered to round 3



#### Council website

A special landing page on the Council's website was built specifically for this project and residents were directed there to find out more.

#### 4.4.2. Contamination policy

Crews were reminded about lifting lids to check bin contents, and were reminded to issue the newly-developed contamination stickers (image 18) on offending containers (this was already in place borough-wide). They were instructed to leave the contaminated recycling bin behind for the resident to deal with and report the address via their in-cab technology. A series of letters, escalating in tone, (similar to the project with Greenwich – see the first case study) were sent to residents, reminding them how to recycle correctly.

Image 18: Contamination bin sticker used in Waltham Forest



## 4.5. Results

### 4.5.1. Contamination

Composition sampling of recycling bins was conducted in all four rounds before and after the interventions were rolled out. 50 households per round had their recycling bins collected separately, (approximately 150kg per round), for three weeks in a row, to give a good average. The sampling looked at the percentage by weight of targeted recyclable materials (thus calculating overall contamination) as well as the presence of food and textiles as follows:

- Loose textiles
- Bagged textiles
- Loose food
- Packaged food

Tables 6 – 8 below set out the results of the recycling composition sampling. The control is included for comparison.

In all rounds, including the control round, overall contamination reduced. However, the results of the individual rounds were varied.

The most successful round in reducing overall contamination and the targeted materials was round 3 – no food and textiles.

**Table 6: Recycling composition sampling results round 1 – targeting food waste**

	Material in the recycling bins				
	Loose textiles	Bagged textiles	Loose food	Packaged food	Overall contamination
Pre monitoring	1.6%	1.7%	0.7%	0.8%	25.5%
Post monitoring	0.4%	0.2%	1.4%	1.1%	18.4%
Change in percentage points	-1.2	-1.5	+0.7	+0.3	-7.1%
Change as a percentage	-75%	-88%	+100%	+37.5%	-27.84%
Change in control round as a percentage	-86%	-100%	-60%	+55%	-36.4%

**Table 7: Recycling composition sampling results round 2 – targeting textiles**

	Material in the recycling bins				
	Loose textiles	Bagged textiles	Loose food	Packaged food	Overall contamination
Pre monitoring	1.7%	2.1%	1.8%	2.1%	75.4%
Post monitoring	0.5%	0.3%	1.1%	1.2%	86.4%
Change in percentage points	-1.2	-1.8	-0.7	-0.9	-11
Change as a percentage	-71%	-86%	-41%	-43%	-44.7%
Change in control round as a percentage	-86%	-100%	-60%	+55%	-36.4%

**Table 8: Recycling composition sampling results round 3 – targeting food and textiles**

	Material				
	Loose textiles	Bagged textiles	Loose food	Packaged food	Overall contamination
Pre monitoring	2.4%	1%	0.6%	1.6%	26.9%
Post monitoring	0.4%	0	0.4%	0.4%	13.1%
Change in percentage points	-2	-1	-0.2	-1.2	-13.8
Change as a percentage	-83%	-100%	-33%	-75%	-51.3%
Change in control round as a percentage	-86%	-100%	-60%	+55%	-36.4%



#### 4.5.2. Rejected loads at the MRF

The number of rejected loads went down on all the rounds.

#### 4.5.3. Contamination policy

The new contamination policy was rolled out at around the same time as this pilot. Therefore, all crews had been trained to look for contamination and reject bins at the kerbside. This accounts for the reduction in contamination on the control round – proving again that a feedback mechanism, and leaving a contaminated container behind, drives home the message of the need to recycle correctly.

The crews did start off rejecting contaminated bins, with many residents receiving a stage one letter. However, when reviewing the results from the project, it was evident that many were not escalated to the next stage. This was due to a combination of increased demand in the back office, and inconsistency with the crews applying stickers and reporting this back. Some reported back that using the stickers was slowing them down. Due to their large size, they were not easily able to carry them in their pockets as they walked the rounds.

#### 4.5.4. Organics collections

The mixed organics collection is an opt-in service for residents. This project highlighted that many residents – particularly on the no food round – did not have the mixed organics bin. The Council saw an unprecedented rise in requests for this container. Residents were initially confused by the message that they could not put food waste in their refuse bin, until they realised that they could request an organics bin. We surmised from this that food waste capture, and participation in the service, have subsequently increased.

#### 4.5.5. Textiles bring banks

The Council looked at the tonnages in the textile bring banks closest to rounds 2 and 3, to see if there was a noticeable uplift in tonnage. The communications went out during September, so they looked at the month of October and compared to previous years.

There was no significant uplift in the textile banks closest to round 3. However, there was an increase in the tonnage collected in October in the banks closest to round 2; this equated to an average increase of 261 kg compared with the previous two years. While it is not clear if this was attributed to the 'no textiles' messaging, the rise in tonnage did coincide with the campaign's launch.

#### 4.5.6. Bin stickers

Unfortunately, the bin stickers used in this pilot did not withstand the weather conditions. The colours quickly faded, and they became damaged in the rain.

## 4.6. Lessons learned

- The Council felt using the simple 'back to basics' style demonstrated a fresh approach to designing recycling campaigns. They commented that they believe this style of communication can simplify complex recycling systems and help residents to re-engage in their service.
- Officers thought placing stickers on all three of the resident's bins may have led to confusion, particularly where residents did not have the organics waste bin. The Council does not plan to adopt the method of using bin-top stickers in the future due to their short

lifespan, which may have impacted the longevity of the message. However, this can be remediated by using more robust stickers.

- A contamination policy with a feedback mechanism has a positive impact in decreasing contamination in kerbside recycling. However, it does rely heavily on crews to check in bins, issue contamination stickers/tags and report the property. It also needs full support from the back office. The results from this, and the kerbside project with Greenwich, led LWARB to develop the Recycling Quality Officers pilot<sup>5</sup>; testing the hypothesis that utilising a dedicated resource of “recycling quality officers” to check recycling containers ahead of the crews would lead to more contaminated bins being identified - and subsequently more residents correcting their behaviour.

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<sup>5</sup> Read more about the pilot XXXXX

## 5. NEWHAM COUNCIL - KERBSIDE PROJECT

### 5.1. Introduction

#### 5.1.1. The borough

The London Borough of Newham is a waste collection authority in east London. It is one of four London boroughs whose waste is disposed of by the East London Waste Authority (ELWA). The 2011 census recorded just over 100,000 households, of which 37% are within purpose-built flats, and a population of approximately 308,000.

#### 5.1.2. The project

During 2016/17, Newham's contamination rates were amongst the highest in the country, whilst its recycling performance was at the bottom of the league table. High levels of "dirty" contaminants like food waste and nappies were present in the recycling, with corresponding losses of clean recyclable materials (particularly paper and card) due to spoilage.

Various studies have indicated that one of the barriers preventing residents from recycling correctly, is the high volume of detail provided to them in one go, and that residents would prefer to receive information on a specific material, rather than receive general information about recycling. Resource London devised a "back-to-basics" idea of communicating to residents, which focussed on one type of material at a time, in order to simplify the process for residents. The approach was adopted in Newham and covered three kerbside recycling rounds, each of which received a material-specific communications message and a control round which received no messaging.

### 5.2. Service profile

Newham's kerbside collections consist of a weekly residual waste service, a fortnightly recycling service and an opt-in garden waste service. There is no separate food waste collection. (see Table 9 below).

Their operations are in house, with their recycling taken to PDMR's MRF in Kent, although at the time of this project, it was processed at Mid UK recycling in Grantham.

**Table 9: Newham's kerbside collection profile**

	Materials	Container	Frequency
Recycling	Fully co-mingled	240l wheeled bin Or orange bags	Fortnightly
Garden		Black sacks	On demand
Refuse		240l wheeled bin	Weekly

### 5.2.1. Contamination policy

At the time of this project, Newham operated a clear-all policy, and did not have a process to communicate with residents if they had contaminated their bins.

The main contamination issue for Newham was that a large amount of the paper – which is collected within the co-mingled recycling bin – was unable to be recycled as it was wet and dirty, mainly due to the presence of food waste and nappies within the recycling bin.

## 5.3. Main findings from the service review

### 5.3.1. Services

There are different coloured bins across the borough for residual waste, (some are fully green, and some are fully black) and the recycling bins are green with an orange lid. This could cause confusion amongst residents, leading them to place some residual material in the recycling bin.

Vehicles are double shifted, with residual waste collected in the morning and recycling collected in the afternoon. This could lead to the possibility of residents placing their residual waste into the recycling bin if they have missed their morning collection. In addition, there is a chance that some residual waste could be left on the vehicle when the recycling is collected, leading to contamination of the recycling.

There are no separate food waste collections in Newham, so residents may use the recycling bin for food, which could be one of the main reasons for contamination.

### 5.3.2. Communications

At the time of the project, Newham Council did not have a communications plan in place for their household collections. However, they were sending out an annual leaflet / calendar to residents, and carried out door-to-door canvassing.

In 2014 all kerbside bins were stickered.

No communications were produced for non-English speaking residents.

Newham appeared to engage well with residents, especially through the door to door canvassing, however the borough was still experiencing high levels of contamination – estimated to be around 42% at the time of the project.

## 5.4. Interventions

The main aim of the project was to increase the volume of clean paper and card in the kerbside recycling. Using the back-to-basics approach of communicating only one material at a time, we piloted three different messages, as set out in table 10. The first was a positive message, encouraging clean paper and card to be placed in the recycling bin. The next two were more negative, targeting the main contaminants that were causing paper and card to be spoiled, namely food waste and dirty nappies.

**Table 10: Description of the three messages tested in Newham**

Round	Main message
Round 1	YES - to clean paper and card to go in the recycling bin – and not the residual bin
Round 2	NO – to food waste in the recycling bin – and yes to it going into the residual waste bin
Round 3	NO – to nappies in the recycling bin – and yes to them going into the residual waste bin

Pre-monitoring was completed over three consecutive collection cycles on all four rounds, which consisted of a waste composition analysis. After this, each property on the selected trial rounds (not including the control round), was door-knocked by Newham’s visiting team to talk about this campaign.

The team were instructed to talk about the Council’s desire to drive up clean paper and card capture in the recycle. They were also instructed to focus discussions on the material that was being targeted on their round. The team did provide further information to the resident if they were asked a direct question.

The resident was provided with a sticker for their recycling bin, and a postcard to keep as a reminder inside the house. (see images 19 – 24). Both materials contained very simple messaging, only focusing on the target material.

#### Images 19 and 20 – Postcard with YES to clean paper and card in the recycling bin

Front



Back



Images 21 and 22 – Postcard with NO to food waste in the recycling bin

Front



Back



Image 23 and 24 – Postcard with NO to nappies in the recycling bin

Front

Back



Where the visiting team were unable to speak with anyone in the household, a pack containing the relevant stickers and the postcard was put through their door.

Once the communications campaign had been completed, post-monitoring was completed over three consecutive collection cycles on all four rounds.

## 5.5. Results

Clean paper and card went up significantly in all the pilot areas, compared to the control.

### 5.5.1. Round 1 – clean paper and card

The results from round 1 (table 11), showed a **35.83%** increase in the amount of clean paper and card present in the recycling bins.

**Table 11: Results of composition sampling in round 1**

	Material				
	Clean paper and card	Dirty paper and card	Food waste	Nappies	Dirty plastic bottles/tins
Pre monitoring (%)	31.12	18.2	11.83	2.12	3.19
Post monitoring (%)	42.27	10.61	2.87	0.9	3.6
Change in percentage points	11.15	-7.59	-8.96	-1.22	0.41
Change as a percentage	35.83	-41.71	-75.7	-57.31	12.77
Change in control round as a percentage	3.86	-15.3	-64.45	12.02	-20.19

The door-knocking contact rate was **38%**

### 5.5.2. Round 2 – food

The results from round 2 (table 12), showed a **67.63%** decrease in the amount of food waste in the recycling bins.

**Table 12: Results of recycling composition sampling in round 2**

	Material				
	Clean paper and card	Dirty paper and card	Food waste	Nappies	Dirty plastic bottles/tins
Pre monitoring	31.39	16.18	10.33	1.13	2.69
Post monitoring	41.57	11.74	3.34	1.09	2.94
Change in percentage points	10.18	-4.44	-6.99	-0.04	0.25
Change as a percentage	32.42	-27.45	-67.63	-3.21	9.17
Change in control round as a percentage	3.86	-15.3	-64.45	12.02	-20.19



The door-knocking contact rate was 39%

### 5.5.3. Round 3 – nappies

The results from round 3 (table 13), showed a **33.55%** decrease in the amount of nappies placed in the recycling bins.

**Table 13: Results of recycling composition sampling in round 3**

	Material				
	Clean paper and card	Dirty paper and card	Food waste	Nappies	Dirty plastic bottles/tins
Pre monitoring	34.53	14.6	9.31	1.6	3.03
Post monitoring	43.61	11.63	3.13	1.06	2.42
Change in percentage points	9.08	-2.97	-6.18	-0.54	-0.61
Change as a percentage	26.30	-20.38	-66.38	-33.55	-20.25
Change in control round as a percentage	3.86	-15.3	-64.45	12.02	-20.19

The door-knocking contact rate was 32%

## 5.6. Lessons learned

The overall aim of the Back to Basics trial was to increase the amount of clean and dry paper within the kerbside recycling bins, and this was achieved.

### 5.6.1. Cleaner paper and card

Due to discussions with the visiting team, residents understood that food and nappies being placed into the recycling bin were the main reasons for the paper and card within the bin to become dirty and wet (this information could not have been derived from the stickers and postcard alone). The percentage of food and nappies, and subsequently dirty paper and card, therefore decreased in all three targeted rounds, resulting in an increase in the percentage of clean paper and card.

However, the percentage of dirty plastic bottles and tins present in rounds 1 (targeting clean paper and card) and 2 (targeting food waste) increased during the project, leading to the assumption that residents on these rounds are less aware of the link between food residue from containers contaminating the recycling, than the link between direct food waste contaminating the recycling.

### 5.6.2. Containing the message

As can be seen from the table 12 above, food waste in the control round decreased almost as much as in round 2, which proactively targeted reducing food waste. The control round was located in close proximity to the trial rounds, so there is a high probability that residents living on the control round may have seen the stickers on the bins of the trial round and/or know people living on those rounds.

### 5.6.3. Resident response to messaging

Anecdotal evidence showed that some residents were unhappy about the 'No Nappies' stickers being placed onto their bins when they didn't produce nappies from their household, as the message was not relevant to them.

The "back to basics" approach may not be suitable as a borough-wide campaign. Resource London has done limited further testing on this messaging approach at the kerbside. However, we do use a similar approach on our social media, [London Recycles](#) campaign, to enable us to put out short, snappy messaging.



