IMPROVING THE QUALITY OF HOUSEHOLD RECYCLING IN LONDON

Insights and recommendations

December 2020

LWARB
London Waste and Recycling Board

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INTRODUCTION

Contamination in the recycling stream

Contamination in the household recycling stream is one of the most common issues London's local authorities face with their household collection services, affecting budgets, recycling performance and the quality of recylate.

Items are considered as being a contaminant if they are not in the correct recycling stream/ container, even if the item can technically be recycled. For example, if textiles, plastic film or food (three common contaminants) are put into a recycling bin, targeting paper and card. Contamination in recycling is most prevalent in co-mingled collections, where more than one item is mixed in with another e.g. paper with card, or cans with glass bottles and plastics. It is more problematic for co-mingled collections, due to the need to sort this recycling at a materials recovery facility (MRF). MRF operators do not want to receive materials their machinery is not set up to identify and separate out. Most contaminants will be sorted into a mixed pile and sent for waste treatment (depending on market availability).

Contamination tends to be categorised as non-target (can technically be recycled but is not currently accepted under the local contract) or non-recyclable (e.g. nappies or black sacks, where the contents are unknown). How contamnation is catagorised is dependent on the individual collection and contractual arrangements of each local authority.

There are many reasons why recycling becomes contaminated. Residents often think certain items are accepted for recycling, due to a misunderstanding or poor communications which causes them to accidentally contaminate; or there is confusion over the exact items accepted e.g. with the variety of plastics on the market. There are also occasions where people appear not to care and will simply use the nearest bin. Other causes include crew behaviour (e.g. mixing materials on the vehicle), bad container signage, poor crew training and so on.

Food is one of the most common contaminants, caused by packaging not being rinsed out before being put into the recycling. This then spoils other materials in the mix, such as clean paper and card.

Why do we need to reduce contamination?

Improving the quality of dry recycling is critical not only in terms of increasing recycling rates, but also for authorities to deliver efficient and cost-effective services. Dealing with contamination on a reactive basis, at the kerbside, or when collecting from flats, has on-going cost and resourcing implications including (but not limited to):

- communicating to residents;
- staff time and fuel costs (not being able to empty a contaminated container prompting revisits to empty contaminated bins);
- picking out contamination at waste transfer stations;
- rejected loads at the MRF;
- a decrease in profit sharing, due to a reduction in the quality of materials sent to the MRF;
- increased gate fees with increases in contamination; and
- increased disposal costs.

With recent changes to available export markets (most notably the Chinese import restrictions) and tighter material quality requirements, coupled with the requirements under the Waste Regulations (England and Wales) (amended) 2012, the quality of material sent for recycling is acutely important. It is therefore imperative that London's authorities improve the quality of recyclate in order to protect market availability.

Contamination levels in London, taken from MRF sampling, can be as high as 40%* on some kerbside rounds, although most Londons boroughs average around 15%. Evidence from LWARB's **"Making recycling work for people in flats"** report demonstrated that the average contamination across the 12 estates tested in six London boroughs was over 30%.

Contamination levels as high as

40%* on kerbside rounds

Average contamination across 12 estates in six London boroughs was

over 30%

*taken from LWARB projects with London boroughs

LWARB projects

LWARB worked with London's authorities to help them understand the true cost of reactively dealing with contamination in the co-mingled recycling stream at the kerbside and flats, and test interventions to reduce contamination and improve the quality of recyclate. We ran a variety of projects with individual London local authorities; these projects, their methodology and their results, are described in this report.

Cost of contamination toolkit

This toolkit allows the user to calculate the true cost to their authority of reactively dealing with contamination in both kerbside and flats recycling.

TOOLKIT

Tackling contamination projects

We ran five one-to-one support projects with four London local authorities to investigate why recycling was contaminated, at both the kerbside and at flats, and tested interventions to reduce it.

CASE STUDIES

Recycling quality officers pilot

This pilot aimed to test our hypothesis that using dedicated officers, walking ahead of the crews, helps identify more contamination than leaving to the crews alone.

SUPPORTING DOCS

COST OF CONTAMINATION TOOLKIT

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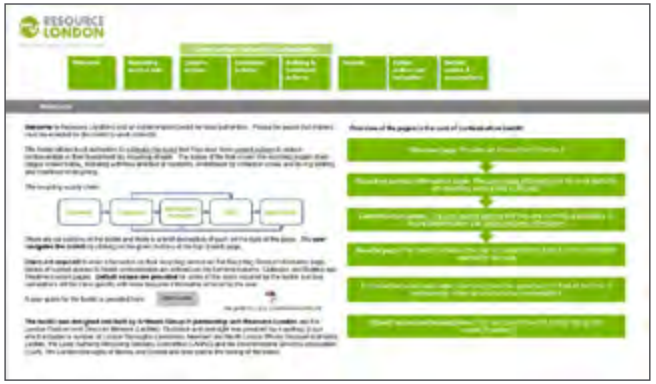
Cost of contamination toolkit

During LWARB's one-to-one meetings with the London boroughs in 2016, contamination in the dry recycling stream was cited as one of the most common issues in their household collections. However, it was evident that most did not have a full understanding on the cost of reactively dealing with contamination in their household dry recycling (i.e. the day-to-day costs, not targeted campaigns). Most had a good understanding of the extra costs from rejected loads, or the variable gate fee linked to contamination levels, but had not considered additional reactive costs such as:

- the cost of communications;
- fuel and staff time associated with additional bin lifts;
- inefficiencies in the service;
- picking out contamination at the waste transfer station; and
- contact centre costs.

To help boroughs understand the true costs of reactively dealing with contamination in the dry recycling – both at the kerbside and on estates and in flats – LWARB developed the 'Cost of Contamination Toolkit'. Part-funded by the London Environment Directors' Network (LEDNet), the toolkit allows the user to enter their own local details and enables a more accurate calculation of the specific cost to their council of dealing with contamination on a reactive basis. LWARB envisioned this information would enable officers to put together a business case for internal support on tackling contamination, thus decreasing costs and improving the quality of recyclate.

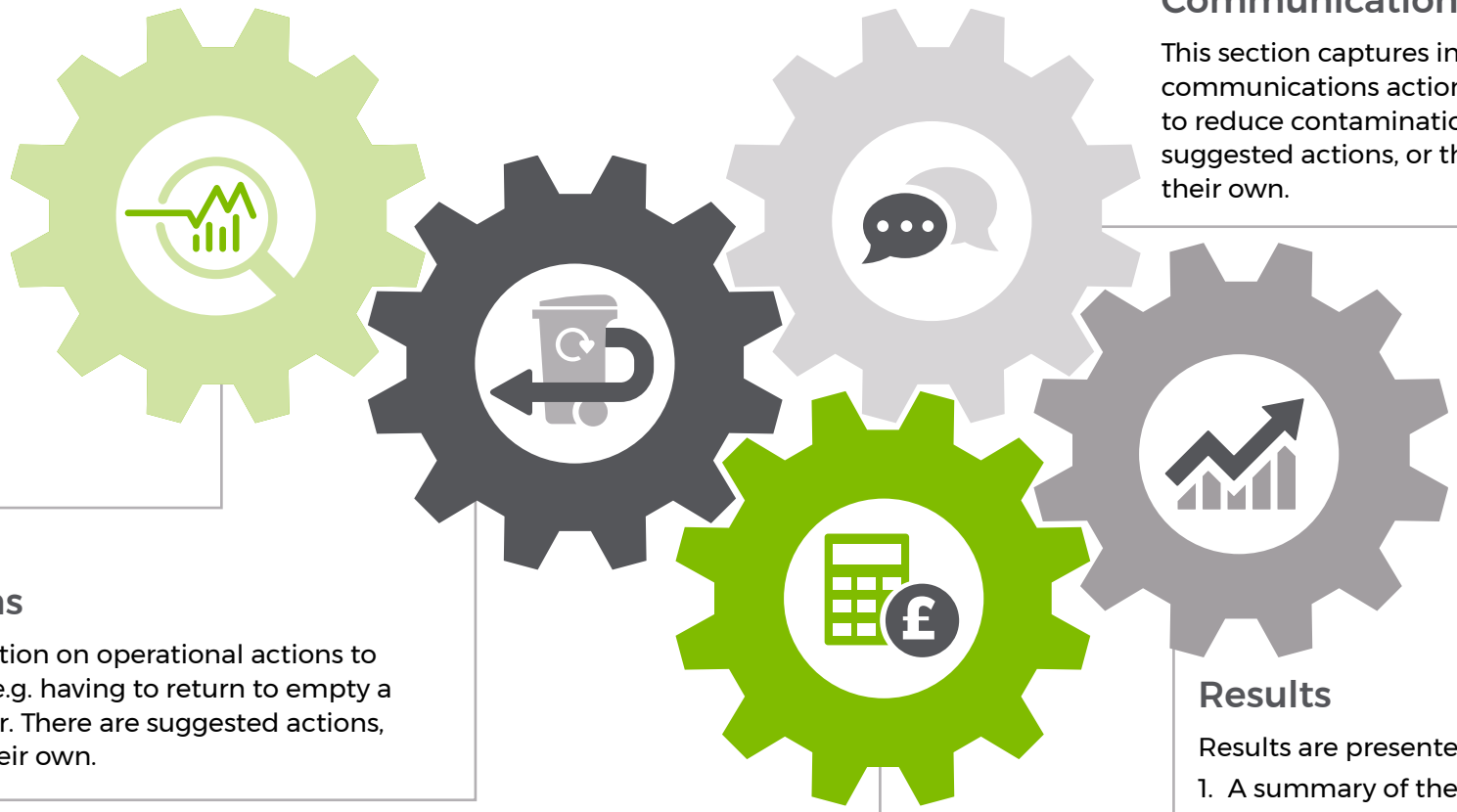


The toolkit was designed and built by Anthesis Group with input, guidance and user testing from LEDNet, WRAP, LARAC, the Environmental Services Association (ESA) and the London boroughs of Bexley, Enfield, Lewisham, Newham and the North London Waste Authority. It is intended for use by waste collection authorities and unitaries.

Toolkit contents

Recycling service info

Captures details on the users' kerbside and flats dry recycling services; bulking and treatment costs; income from material sales; residual waste disposal; and staff costs, to help calculate the cost of contamination.



Communications actions

This section captures information on communications actions and activities to reduce contamination. There are suggested actions, or the user can add their own.

Collection actions

The user enters information on operational actions to reduce contamination e.g. having to return to empty a contaminated container. There are suggested actions, or the user can enter their own.

Bulking and treatment actions

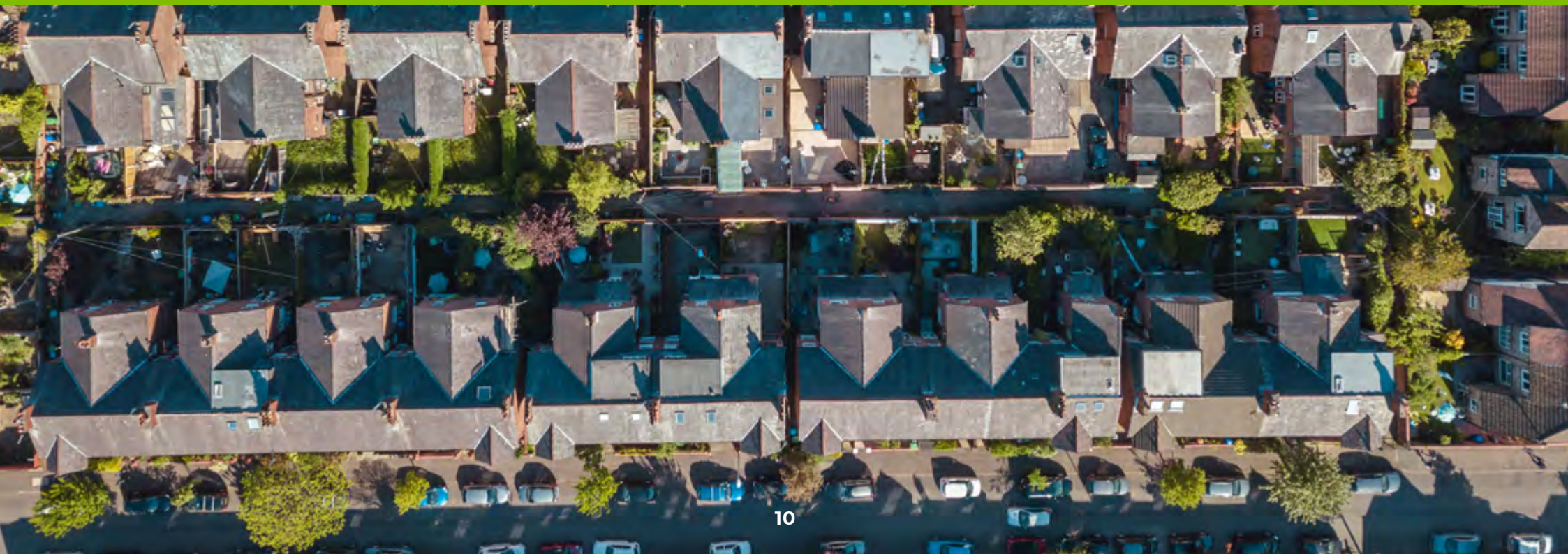
This section draws on information gathered from the recycling service info section, to calculate the cost of actions to reduce contamination during the bulking and treatment of recycling. Plus any additional contractual costs.

Results

Results are presented in four parts:

1. A summary of the recycling services provided
2. The high-level costs per year, per tonne and per household, across kerbside and flats
3. Contamination costs along the recycling supply chain
4. Costs for user, other and third party.

TACKLING CONTAMINATION PROJECTS



Tackling contamination projects

To help understand what interventions reduce contamination in household recycling, we ran several pilots during 2017/18.

Working with four London boroughs, we identified how and why their kerbside or flats recycling stream was being contaminated, then rolled out five bespoke, replicable packages of interventions to tackle the issue.

A robust monitoring and evaluation approach was implemented, and all boroughs used the **London Recycles** communications.

CONTAMINATION PROJECTS APPROACH

1 Data gathering

Completed a workbook to build up a picture of the current services. Conducted a communications review.

2 Cost calculation

Completed the Cost of Contamination Toolkit, to ascertain a true cost of reactively dealing with contamination.

Helped to draw out elements of service methodology for the review.

3 Service review

Used evidence gathered to identify main causes of contamination.

Conducted baseline sampling of recycling stream.

Officers self-assessed the quality of their existing communications materials and methodologies.

4 Agreed interventions

Partnership approach with the participating boroughs, contractors and communications teams.

Adapted communications according to main contaminants identified in the baseline sampling.

5 Preparation

Ensured a robust monitoring and evaluation plan was in place for every project.

6 Interventions roll out

The London Recycles communications style was used.

7 Monitoring and evaluation

This included a control round, to ensure we could rule out any other influencing factors in our interventions.

Common issues identified and how we addressed them

COMMUNICATIONS

1 Unclear signage

Poor **signage in the bin store** used by ground floor residents was causing contamination on an estate with blocks of flats and chutes for the upper floors. This led to recycling bins being used for rubbish as they were the only visible bins on the estate. We worked with the housing provider to improve signage and reminded residents how to dispose of their waste with a new leaflet and targeted letter drop.

2 Service leaflets

Service leaflets were not clear enough, particularly on what materials not to include, or instructions to rinse containers. Utilising the London Recycles communications, we updated service leaflets to make these instructions clearer and distributed them to all households on the pilot rounds.

3 Complex communications

Through extra sampling, we were able to identify the most common and problematic contaminants. We then ran a **simple targeted communications campaign** focusing solely on the main contaminants, using “yes please” and “no thanks” messages on bin stickers and postcards. This successful pilot was run on kerbside rounds only.

4 Out-of-date stickers

Recycling bin stickers in some cases were either out of date or non-existent, leaving the resident guessing what to put in the bin. This was for kerbside and flats. We updated these with clear pictorial stickers, which matched the leaflets.

Common issues identified and how we addressed them

CREWS

1 Crew checks

Crews were not always **looking in the recycling bin** before emptying, to see if they could spot contamination. Refresher crew training and supervisor spot checks helped improve performance.

2 Inconsistent standards

A couple of the pilots highlighted **inconsistencies** between crews **in identifying contamination** out on the rounds. Some crews were overzealous in their choices, whereas others were confused e.g. by the mix of plastic types. We encouraged information sheets to be provided to the crews, with clear pictures of what constitutes contamination. The councils also needed to set the bar on when an entire bin should be rejected, depending on the level of contamination. For example, one crisp packet mixed in with clean recycling could still be accepted.

3 Split-back vehicles

Crews using split-backed vehicles were found to be **putting rubbish in the recycling side**, when the rubbish side was full, instead of tipping the vehicle and returning to the round. This was leading to rejected loads at the MRF. Further training and supervisor spot checks helped get on top of this issue.

4 Vehicle cleaning

Some collection teams were **not cleaning out vehicles**, particularly those that double-shift between rubbish and recycling. The recycling was being contaminated from rubbish that was still left in the collection vehicle. Vehicle spot checks helped improve the situation.

Common issues identified and how we addressed them

CONTAMINATION POLICY

1 Low-impact policies

Some boroughs had an **ineffectual contamination policy**, which had little effect on behaviour change. We piloted a policy which included a more robust **feedback mechanism** to residents, using an escalating series of letters direct to the householder. This had a positive impact on behaviour change, with a large reduction in contamination.

2 Inconsistent policy deployment

The contamination policy is reliant on crews looking in bins, tagging contaminated bins and recording the property. This was **inconsistently delivered** by the crews, due to e.g. task and finish; use of paper records; lack of in-cab technology; and poor training. Crews were reminded of what to look out for and how to record contamination properly; and spot checks were carried out.

3 Policy discord

We found in one borough that there was **no agreement** between the recycling officers, crews and manager **as to what the contamination policy should be**. Some crews were checking for contamination and leaving the containers behind with a contaminationcard, whereas others were not checking at all. Before you can improve contamination, you need to have a robust contamination policy in place which is fully supported by members. This should be communicated clearly to all relevant staff to ensure it is implemented consistently, and maintained.

Example of communications assets

RB Greenwich's new kerbside recycling bin sticker

Bin stickers used in both Newham and Waltham Forest

Contamination bin sticker used in Waltham Forest

New contamination tag used in Greenwich

Main findings

Within these findings are links to templates and case studies to guide you through how to improve the quality of recycling in your borough. Please refer to Final Recommendations for a summary on the suggested steps to take.

1 Contamination policy is key

A robust contamination policy, with a **feedback mechanism** to residents, was the most impactful intervention. Telling residents they have contaminated and leaving their container behind, had a significant impact on behaviour change. This works better at kerbside properties, or small blocks of flats. Operating the feedback mechanism is resource intensive but highly impactful.

2 Full service review important first step

Before launching into interventions to improve the quality of recycling (beyond a contamination policy), you need to **pinpoint the exact issues** in your service and design the interventions around these. Use our **workbook** to help evaluate your service.

3 Crews play a huge part

Crews are your eyes and ears on the ground. They can act as a good barrier to prevent contamination entering into the recycling stream and are a useful communications tool. However, we saw huge variation between the boroughs and even crews within a borough. **Regular crew training** and **spot checks** are critical for the success of any intervention.

4 Clear communications

A common issue, was outdated, unclear communications. For example, "mixed recycling" on a recycling bin does not clearly state what can be included, and will most certainly lead to contamination. Ensure all communications are updated with any material change. See the London Recycles communications assets for examples of good practice.

5 Main contaminants

Food waste was one of the most common contaminants across all the projects. It is important to include a "rinse your containers" message in all communications. Textiles was also high, with confusion as residents know they can be recycled, so assume they get picked out. Plastics is one of the most confusing materials for residents, due to the many different types on the market.

6 Case studies

Please read through the case studies for each project, to find out more information on identified issues and the piloted solutions. You should also look at the results from the flats recycling improvement project and consider utilising the flats recycling toolkit for addressing contamination at flats.

With thanks to the London boroughs of Newham, Waltham Forest, Royal Borough of Greenwich, Westminster City Council and Veolia Environmental Group.

RECYCLING QUALITY OFFICERS PILOT

Recycling quality officers pilot

The 'Tackling Contamination' projects proved that a robust contamination policy, including a feedback mechanism to the resident and leaving the contaminated container behind, has the biggest impact in resident behaviour change (and will lead to an improvement in the quality of recyclate). However, this heavily relies on crews taking time on the rounds to check the bins, issue a sticker or bin hanger and record the associated address. We found that on many rounds this was not being done, for a variety of reasons including wanting to finish quickly, not understanding contamination, poor record keeping etc.

For the recycling quality officers pilot, our hypothesis was that **using a dedicated team of recycling quality officers to deliver the contamination policy** at the kerbside would **identify more contaminated recycling bins than the crews alone**. This in turn would have a bigger impact on reducing contamination. This project, part-funded by LEDNet, tested our hypothesis and evaluated the cost benefit of doing so.

Methodology

To test our hypothesis, we employed Keep Britain Tidy to supply a team of recycling quality officers (RQOs) to work in four London boroughs – Brent, Haringey, Royal Borough of Greenwich and Lewisham – to deliver the contamination policy on the ground, and in the back office.

We worked in two boroughs at a time, on one kerbside round a day for five days over a period of six consecutive weeks. We then moved onto the next two boroughs. We revisited each borough/round for another six-week cycle, 12 weeks after the end of the first cycle, to test the longevity of behaviour change*.

Two RQOs walked ahead of the crews to operate the council's contamination policy. This involved lifting recycling bin lids, checking for contamination, tagging contaminated containers, and recording the address. At the end of the round, they returned to the office to download the captured data. They then either processed all the addresses to send out letters or left this with the council back office staff.

*The outbreak of COVID-19, and subsequent lock down, brought activity to an early finish. But there was still substantial data gathered to fully evaluate the effectiveness of this pilot.

Contamination policy

The participating London boroughs all followed a similar contamination policy process.

1. Each contaminated recycling bin was tagged, no matter how many times that property had contaminated.
2. When a property was noted as having contaminated a second time, they were sent a letter informing them that incorrect items had been found in the bin, with a reminder of what they can recycle.
3. The third time of contaminating led to a strongly worded letter, warning that their bin may be removed (depending on the borough). This was followed up with a household visit to discuss the correct way to recycle.
4. On the fourth occurrence, the recycling bin was removed if that was the council's policy. Those that did not have this policy stopped their process at the resident visit.

*Aside from Greenwich – refuse crews empty tagged bins on the same day

A full write up of the on-the-ground activity including staff recruitment, delivery of the contamination policy, common issues that arose during the project and how they were dealt with, crew liaison and recommendations can be found on our **website**.

Evaluation methodology

1 Difference-in-differences analysis

To understand whether the pilot led to uplifts in identification of contaminated containers.

This looked at the difference between the number of households identified as contaminating during the project, compared to the average of those identified without the activity of the ROQs. This approach relied on the participating boroughs providing data on the number of households that had contaminated in previous months as a comparator.

2 Analysis of monitoring data

Analysis of logs of contamination to understand the extent to which residents corrected their behaviour over the course of the project.

This looked at the behaviour of residents over time, how many escalated to the next level etc and how they behaved between cycles one and two. Although the second phase of visits were cut short, due to COVID-19, we were still able to gather statistically viable data.

3 Cost effectiveness analysis

To understand whether the benefits arising from the pilot outweighed its costs.

All participating boroughs completed the **Cost of Contamination Toolkit**, to ascertain unit costs associated with administrating the contamination policy and dealing with contamination on a reactive basis.

4 In-depth interviews with residents

To understand views of residents regarding the pilot and the feedback they received.

This was initially conducted face-to-face but moved to telephone and video calls, once the COVID-19 lockdown was introduced.

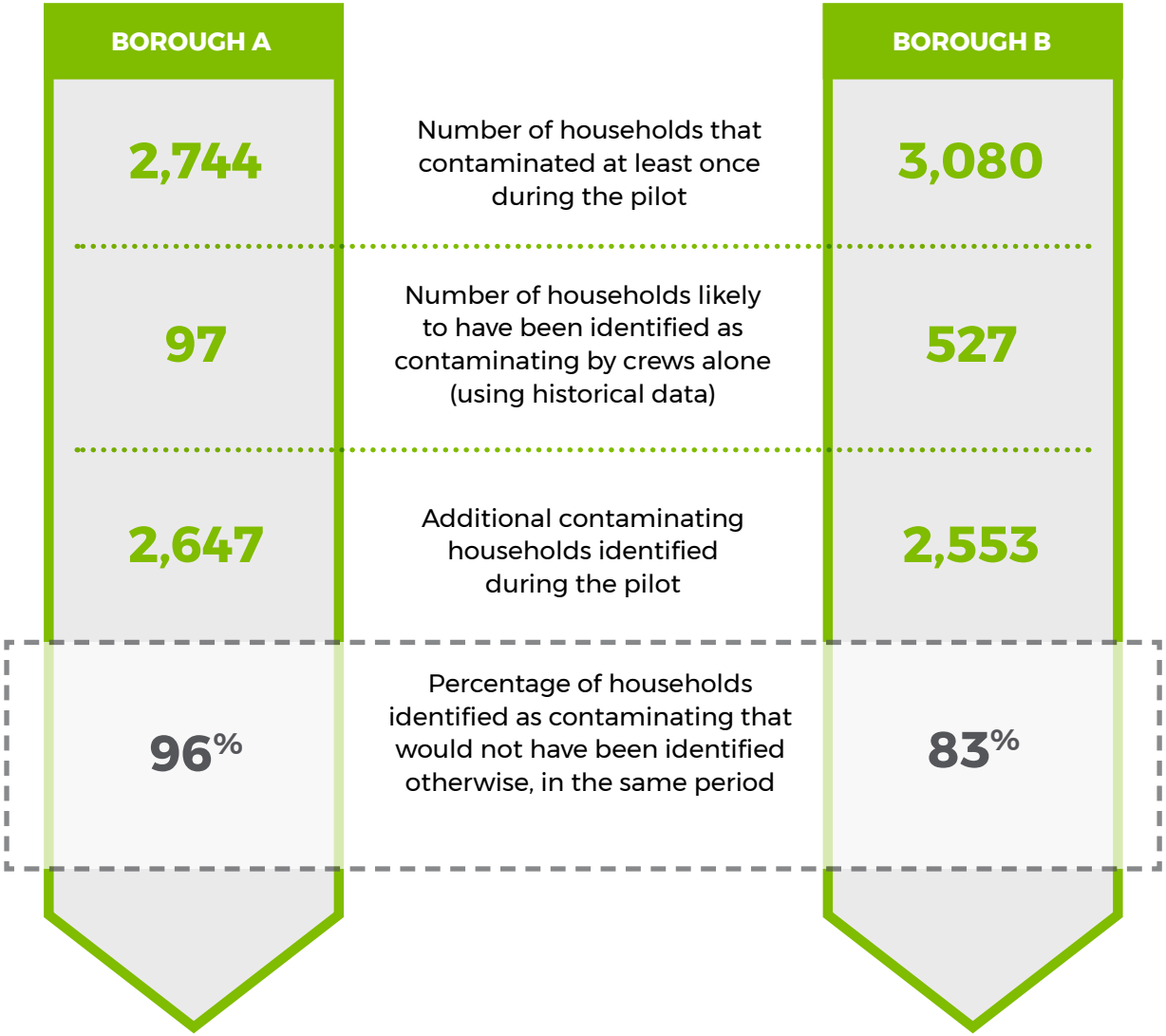
Main results

The findings supported our original hypothesis. Using **a dedicated team** of officers was **highly effective in increasing the identification of contamination** at the kerbside, compared to identification by recycling collection crews. See the image to the right.

Consistent with previous research (the 'Tackling Contamination' projects), the evaluation confirmed that **most residents will correct their behaviour when provided with feedback**.

For both boroughs used in this example, **approximately 80% of contaminating households corrected their behaviour** following either stage 1, 2 or 3 of the feedback process, with less than ten percent of contaminating households having their recycling containers removed as part of the trial. Furthermore, **most identified contaminators in the first cycle did not contaminate their containers again** for the remainder of the pilot, including during the second cycle.

Overall, **residents found the trial acceptable** as an intervention, with no residents interviewed being concerned that the monitoring activity was happening.



A full write up of the evaluation methodology and results can be found on our website

Conclusions and recommendations

1

This approach works

A team of dedicated officers, whose sole task is to check the recycling containers and spot contamination, is better placed than recycling crews to identify contaminated containers. Households receiving feedback are likely to correct their behaviour.

2

Cost effectiveness depends on your local circumstances

Factors that influence cost effectiveness include the current costs of contamination; the extent of under-identification prior to intervention; how easy it is to identify and target problematic areas; and how the approach is implemented. Use the **cost benefit toolkit** to establish if it is cost effective for your circumstances. It may also be more cost effective to deliver this project in partnership with neighbouring boroughs or within a joint waste disposal area.

3

Residents are unlikely to be concerned about officers checking their recycling containers

However, they might be frustrated when told they are not recycling correctly. They also think that communication should be clearer and more consistent.

4

Local authorities should view this approach as a last resort

It is recommended that local authorities do everything they can to reduce contamination rates through less resource-intensive means before employing a team of recycling quality officers, especially by establishing a clear and consistent contamination policy. They should then look at the option of sharing resources, as opposed to running such a project alone.

5

Local authorities should improve messages on what can be recycled, as part of general recycling communications

Findings from the qualitative interviews echo those from previous research that most householders want to recycle correctly and will do the right thing when they are clear about what can and cannot be accepted for recycling. Please refer to the **London Recycles** communications assets for good practice examples.

With thanks to the London boroughs of Brent, Haringey, Lambeth, the Royal Borough of Greenwich, Veolia Environmental Services, Keep Britain Tidy and Winning Moves. This project was part funded by the London Environment Directors Network.

FINAL RECOMMENDATIONS

Recommended process to address contamination in your recycling

Our projects on addressing contamination have provided many useful insights into tackling this issue.

Here are our recommended steps to take to evaluate and tackle the issue in your authority.

STEP ONE

How much?

To get a better idea of how much your authority is currently spending on reactively dealing with contamination at the kerbside and in flats, complete the **cost of contamination toolkit**.

Knowing the cost of contamination can help support requests for internal funding to address the issue.

STEP TWO

Why?

Ascertain why unwanted items are being mixed with the targeted materials in the recycling stream. Use our **template workbook** to carry out a service review.

Remember to **review your communications** materials, bin stickers and signage as well as crew activity.

What?

Consider running some extra recycling composition sampling to understand what the main contaminants are. You can then focus your messaging to residents and the crew training on these main contaminants.

Where?

Is contamination borough-wide or specific to particular rounds? Is this linked to an area or the crew? Is this more of an issue in flats than kerbside? This is useful to know, so you can concentrate your efforts on proactive interventions.

Understanding the why, what and where greatly helps with the next stage – how.

STEP THREE

How?

Intervention measures will depend on your findings from understanding why, what and where recycling is being contaminated. Implementing interventions without understanding why your recycling stream is being contaminated is unlikely to have an impact in tackling the issue.

See the **case studies** from our projects, which highlight the issues that were contributing to recycling contamination and how we overcame them.

Interventions may include:

Communication activities

- Revised service leaflet, with clear messaging, distributed to the entire borough, particularly if you have not updated or distributed one for over a year.
- Targeted communications campaign to the areas with the highest contamination issues. This will be significantly cheaper than a borough-wide campaign.
- Signage improvements on recycling bins and bin stores.
- Simple messaging campaign to target specific materials.

Engaging with crews

- Improved crew training to remind crews to check recycling containers, if you find they have not been doing so.
- Ensuring there is clarity on what to reject at the kerbside/ in flats.

Remember that a well-delivered **contamination policy** has a significant impact on improving recycling. However this can only be implemented once you are certain that residents have been well informed about what to recycle, including ensuring all container stickers are up to date.

STEP FOUR

M&E

Ensure you incorporate methods to monitor the impact of your interventions, to get a good understanding of what does or does not work in your borough. This will also help provide evidence for internal funding to make further improvements.

Please contact us if you want to discuss how to improve the quality of recycling in your authority. Don't forget to visit our **website** for further research reports, toolkits and case studies.

Contacts and further help

Please contact LWARB for more information:

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For more project information visit
www.resourcelondon.org

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