Final Report

Tackling contamination in dry recycling

An updated practical guide for local authorities on managing the quality of recyclable materials collected at the kerbside.

Project code: LEN003 and RCY148

Date: First published 2015
Date: Updated May 2021

WRAP's vision is a world in which resources are used sustainably.

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

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Document reference (please use this reference when citing WRAP's work):
WRAP, 2020, Banbury, Tackling Contamination in Dry Recycling, Prepared by Julia Bragg

Written by: Julia Bragg, WRAP

Front cover photography: Food waste found in a dry recycling container

Executive summary

This guide provides an update for Local Authorities still facing regular problems with the quality of the materials collected, on ways to tackle contamination. Quality of recycling is a key tenet of Defra's Resources and Waste Strategy. The guide focuses on dry recyclables collected at the kerbside and, primarily, on their contamination by the householders who set them out for collection.

Whilst the term 'contamination' is used widely by those working in the sector it is not a term that householders tend to understand. WRAP would advise that the term 'contamination' is not used in communications with residents.

WRAP's research on recycling attitudes and reported behaviour reveals that 82% of UK households add one or more items to their recycling collection that is not accepted locally. Evidence generally points to contamination of recyclables being a large-scale problem with data from MRF sampling indicating that 16.6% of input material to MRFs was contamination.

Contamination may create practical and even reputational issues at the different stages of recyclables' journeys from kerbside to reprocessing. Increased collection and reprocessing costs effectively reduce the value of materials destined for recycling. In most cases, additional costs are eventually passed back to the local authority in the form of lower revenues or higher gate fees.

Part A examines the issue of contamination and considers what causes it, the problems it creates and the legislative drivers currently in place. The aim is to inform thinking and decision-making within your organisation. You may wish to use this information when creating a business case to act on contamination.

To help you consider your options to reduce contamination and improve quality, we provide ideas and insight on what has been used in the past. **Part B** of the guide is broken down into 6 parts:

- investigate & quantify the problem;
- develop robust policy;
- identify costs of contamination;
- act on contamination;
- measure impact & costs of action; and
- evaluate next steps.

Projects with Local Authorities carried out by Resource London, which WRAP was a part of, strongly suggests that householders are informed when there is something in their recycling that shouldn't be there. We term this a "feedback loop" to address householder confusion. The number of methods to feedback are limited, because checking container contents and potentially leaving containers unemptied can be politically tricky, but it is good to know that Local Authorities have options to consider on the following:

- what constitutes a "contaminated" container for your Local Authority;

- when to act;
- where to act;
- which contaminants to focus on;
- whether to engage crews to act on contamination or to use third parties;
- how robust the action will be, although this may affect its impact; and
- how long to act, although this may affect the impact of the action.

Ultimately what actions your Local Authority chooses to implement will be unique to your situation.

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Acknowledgements

WRAP gratefully acknowledges the support and involvement of its partner the London Waste and Recycling Board (LWARB) which led to the creation of Resource London (now ReLondon). Many of the lessons learned and thinking behind this guide have evolved from ReLondon's Tackling Contamination Project.

We would also like to thank the officers, collection crews, MRF staff and contractors at Bracknell Forest Council and Reading Borough Council involved in a pilot study to tackle contamination run during the difficult times of 2020.

1.0 Introduction

1.1 Aim of this guide

Defra's Resources and Waste Strategy sets out in Chapter 3 that the quality of recycling is important. There is a "need to drive better quantity and quality in recycling... We want to promote UK-based recycling and export less waste to be processed abroad" for which high quality recyclate is required, to be cost-effective. WRAP published its "Dry Recyclables: Improving Quality, Cutting Contamination" guide in 2015 which is as relevant now as it was then, in its updated form. The problem of contamination in dry recycling hasn't gone away and there is still a need to tackle the quality of dry recycling collected from households.

Combining evidence, practical advice and a range of reference material, this guide aims to equip you with the resources required to build a compelling business case for boosting the quality of dry recyclables through communications campaigns and/or changes to collection services. It will also help you develop and implement initiatives that deliver quantifiable reductions in the level of contamination seen in materials collected in your area.

1.2 Focus and coverage

This guide focuses on dry recyclables collected at the kerbside and, primarily, on their contamination by the householders who set them out for collection.

Householders may not be the only source of contamination. Collection crews may load materials into a vehicle which has not been properly cleaned after being used for other materials, or they may place the wrong materials in the separate compartments of vehicles (perhaps near to the end of the round when a compartment is full). In addition, contamination may occur during handling at a Waste Transfer Station or if there is incomplete sorting at an MRF.

Part A examines the issue of contamination and considers what causes it, the problems it creates and the legislative drivers currently in place. The aim is both to inform thinking and decision-making within your organisation and you may wish to use this information when creating a business case to act on contamination.

Part B sets out a suggested plan of action for local authorities wishing to take practical steps to cut contamination of kerbside-collected dry recyclables.

Part A - Contamination: Causes and Costs

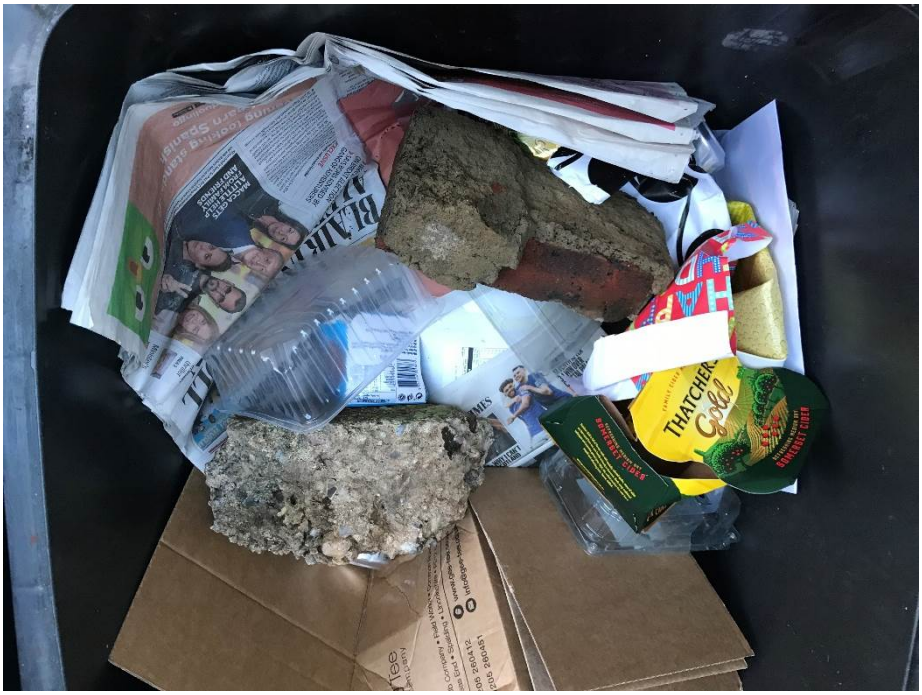


Figure 1 – Confused or Deliberate? Rubble is a fairly common contaminant

2.0 What is contamination and how does it occur?

2.1 Definition

In this guide, 'contamination' refers to any unwanted materials that:

- householders include in boxes, sacks or bins set out for recycling; or
- collection crews place in the wrong compartments of recycling collection vehicles.

Specific items classified as contamination will depend on (i) the range of recyclables you target and (ii) the way you require householders to present items for collection. Broadly speaking, contamination may comprise:

- non-recyclable material, e.g. nappies, rubble, dog waste;
- non-targeted material, e.g. plastic packaging included in 'plastic bottles only' collections; or
- targeted materials contaminated with unwanted items, e.g. food-contaminated cardboard or plastic bottles containing liquids.

2.2 Sources of contamination

A key cause of contamination is confusion about what can and cannot be included in recycling containers. Whilst the term 'contamination' is used widely by those working in the sector it is not a term that householders tend to understand. WRAP would advise that the term 'contamination' is not used in communications with residents; rather people need clear information on what materials they can recycle locally.

WRAP's Recycling Tracker Report 2020 on recycling attitudes and reported behaviour revealed that over four in five (82%) of UK households add one or more items to their recycling collection that is not accepted locally. This figure is higher than previously measured in 2017 and 2018, up from 76%.

When focused just on items that WRAP considers to be "serious contaminants", 45% of UK households put one or more of these items in the kerbside collection. Unlike contamination overall, this is not significantly different from previous years (with 43% recorded in both 2017 and 2018). Below is the list of "serious contaminants" WRAP uses for the Recycling Tracker Survey.

- *Pyrex* & drinking glasses;
- pots, pans & cutlery;
- electrical items;
- textiles;
- mirrors;
- pet litter & pet waste;
- sanitary products;
- animal bedding;
- nappies; and
- food waste.

As local authority spending has reduced, communications to householders about what is and is not collected locally for recycling have become less frequent. It is difficult to prove whether the quality of collected materials has been impacted by less frequent communications but WRAP's Recycling Tracker Survey indicates that more and more people are putting the wrong items in recycling over the years.

Anecdotal evidence from a local authority that conducted whole bin checks does suggest that some contamination behaviours are carried out knowingly. Bins were emptied and the contents examined near to, or inside, a Luton box van, and the contents indicated that some householders struggle to fit all their residual waste in that container (even on weekly collections). Residual waste was hidden under recycling and layers of newspaper/ cardboard.

Other sources of contamination may be due to householders not having the proper containment options, for instance a separate box or bin insert for paper/ card. In essence, a householder that puts fibres into a bin rather than a box is an action caused by a lack of understanding about the right thing to do. Remedying this problem is practical – checking that all residents have a box - as well as communication – letting them know what goes in the box.

In Part B, section 9.2 of this guide, we discuss the further compounding of the problem of contamination by limited or no feedback to householders that contaminate their recycling containers.

3.0 Scale and implications of the problem

3.1 How extensive is contamination?

Although a definitive answer is frustratingly elusive – with different interpretations of what constitutes 'rejected' material making it difficult to develop an accurate picture – evidence generally points to contamination of recyclables being a large-scale problem.

The Environmental Permitting (England and Wales) (Amendment) Regulations 2014, [1] were established to improve the quality of materials handled at Material Recovery Facilities (MRFs or MFs in the regulations). The MF Portal[2] displays the input and output sampling data required by the Regulations for qualifying MFs. The sampling of input tonnage is only for mixed dry recycling and is recorded for each supplier (often a Local Authority). Facilities have been sampling and reporting since 2014. At the time of writing, the latest available data indicate that 16.6% of input material to MRFs was contamination, made up of non-recyclable (11.3%) and non-target (5.3%). Figure 2 shows the upward trend in non-recyclable material sampled at MRFs.

[1] *See page 8 Schedule 9A Materials Facilities*

[2] *Following a 2020 review of the MF Portal, a decision has been made to no longer maintain the Portal going forward. This data will instead now be made available by Natural Resources Wales and the Environment Agency, with links to be made available shortly. 2020 data for England Material Facility sites will be made available by the Environment Agency in quarter April-June 2021.*

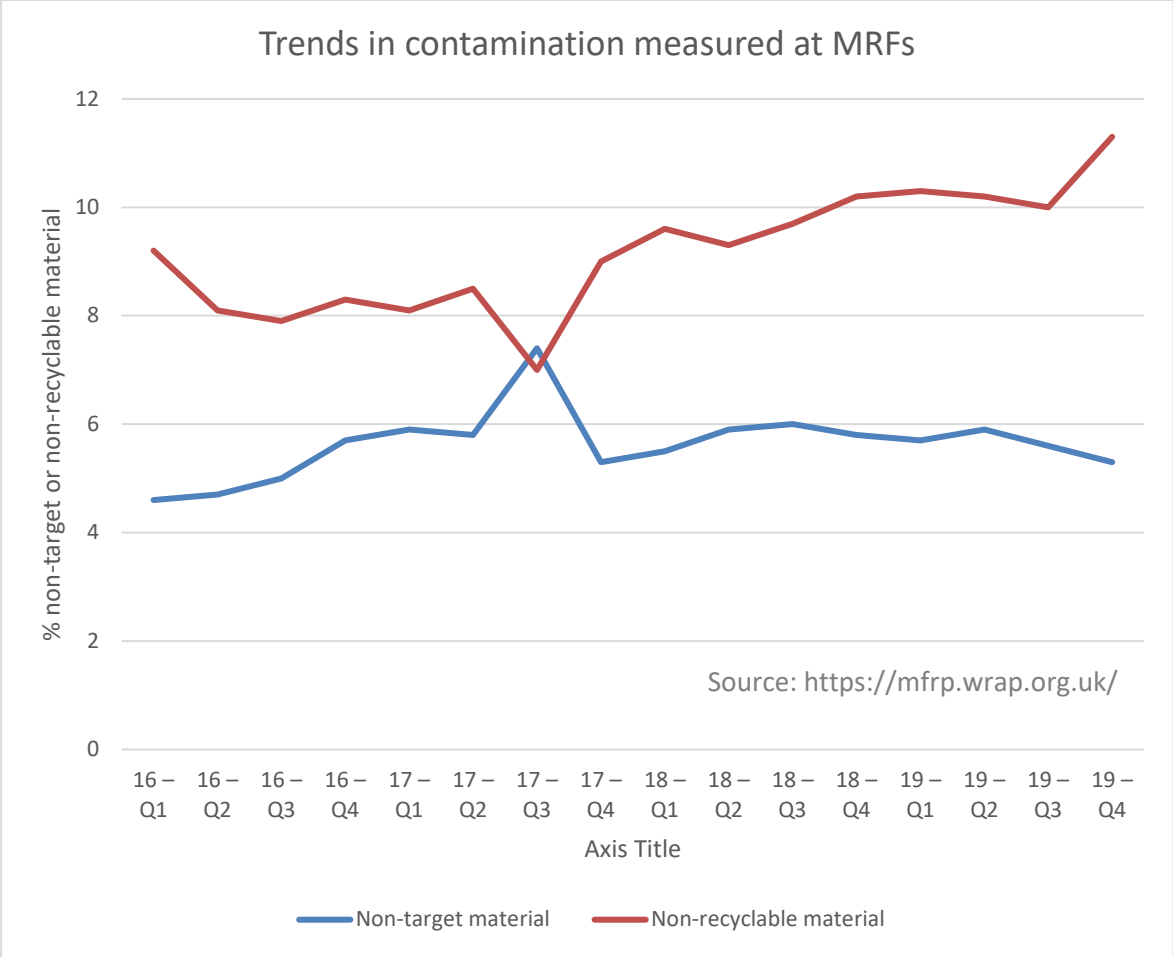


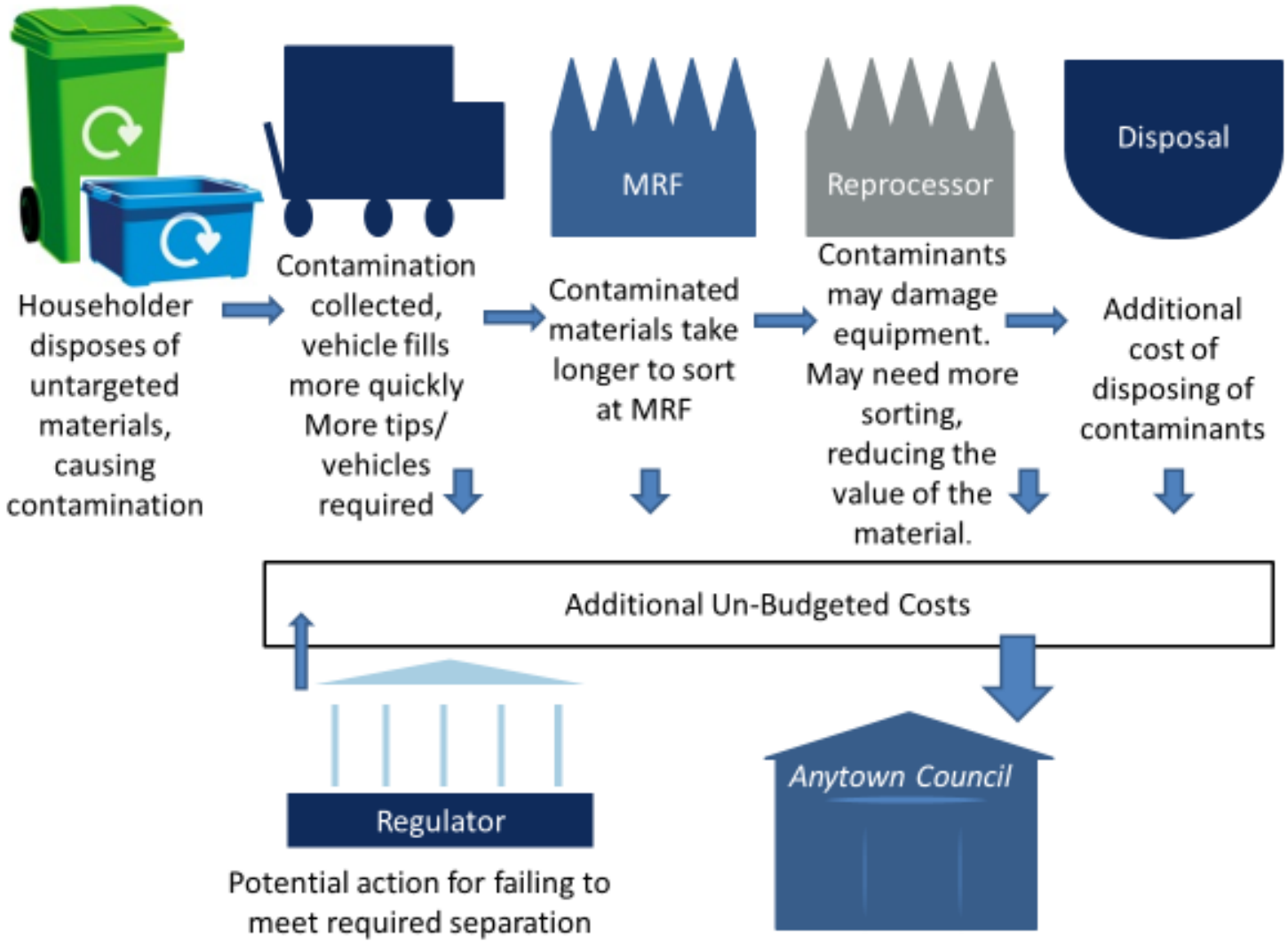
Figure 2 – Trends in contamination measured at MRFs

3.2 What problems can contamination cause?

Figure 3 below summarises the impact of contamination at different stages of recyclables' journey from kerbside to reprocessing. At each stage, practical issues arise, such as unwanted material taking up space in collection vehicles and increased resources required to sort materials. While the majority of householders aim to recycle materials effectively, in an extreme case, just one householder including the wrong materials may mean that a whole load needs to be rejected and sent for disposal.

The bottom-line outcome is increased collection and reprocessing costs that effectively reduce the value of materials destined for recycling. In most cases, additional costs are eventually passed back to the local authority in the form of lower revenues or higher gate fees. WRAP is aware of local authorities having to pay £'00,000s a year in additional MRF gate fees and disposal costs due to contamination levels exceeding limits set in a contract.

Figure 3 – Impact of contamination on recyclables' collection and treatment



4.0 Impact on key players in the quality chain

4.1 Background

The flow of materials from kerbside to reprocessor may involve multiple intermediaries, such as MRFs providing sorting or secondary sorting services, or merchants involved in buying and selling materials. For the purposes of this guide, the key players are defined as:

- **Collectors**: local authorities and, where services are contracted out, their contractors;
- **Sorters**: organisations running MRFs and material-specific sorting facilities such as Plastic Recovery Facilities (PRFs); and
- **Reprocessors**: organisations that receive secondary materials and turn them into saleable products/materials.

Since the first publication of this guide, the linked trends (shown below in Figure 4) in price and quality have become more apparent.

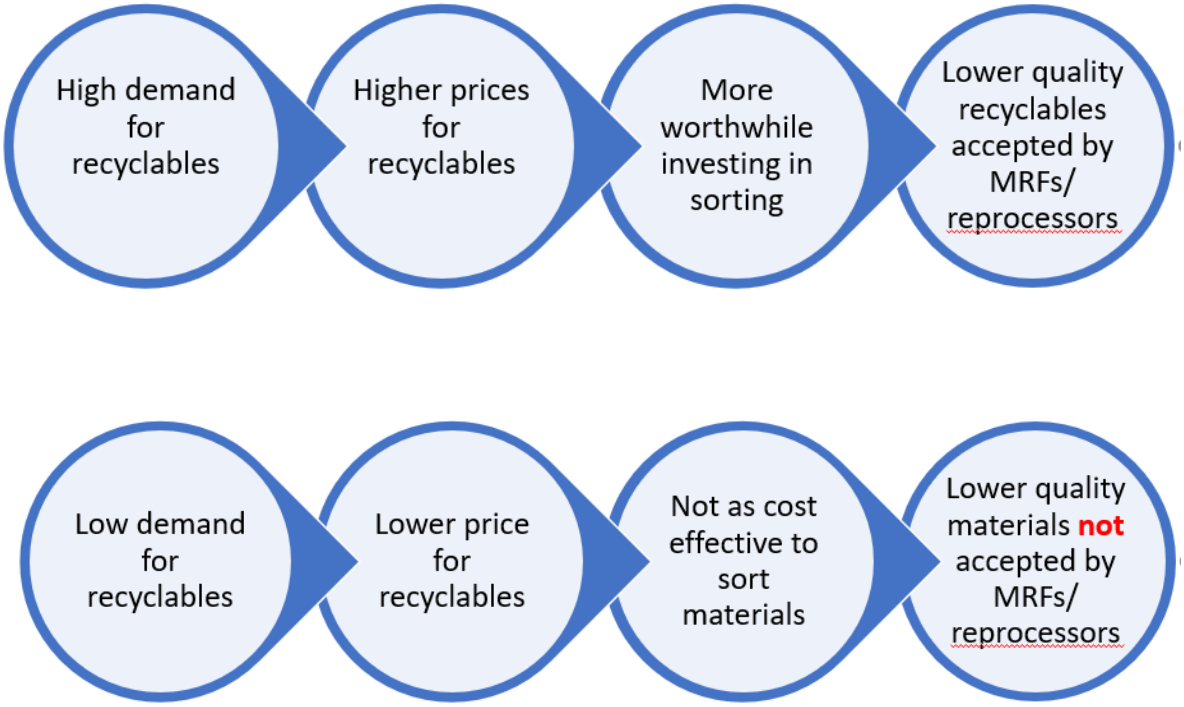


Figure 4 – Trends in materials quality and price

Simply speaking, the cost of collecting recyclables will increase if contaminants are present. Collection vehicles fill up more quickly, requiring more tips and possibly more vehicles to service a round. Moreover, revenues accruing to local authorities through materials sales may erode if quality is consistently impaired. Local authorities can, however, influence recyclables' quality by communicating with residents and asking

collection crews/contractors to take appropriate action if they spot any contamination in collection containers.

4.2 Impact on collectors

Waste management companies contracted to collect materials will, when bidding, take a view on the likely quality and therefore value of the targeted materials. Generally, any deterioration in quality or unforeseen increase in contamination will pose a risk to the contract's profitability.

4.3 Impact on sorters

Waste management companies and some local authorities operate MRFs to sort co-mingled materials. At various stages during MRF sorting (e.g. visual inspections during tipping), there are opportunities to remove contamination.

Average MRF gate fees have increased annually since 2017. WRAP's 2020[3] Gate Fee report shows that median gate fees of £45 per tonne are £20 per tonne higher from 2018 to 2019/20. However, newer contracts have a median value of £53 per tonne (up from £35 per tonne), with a range of -£2 to £110. Increased costs are likely to be passed back to local authorities due to:

- additional time needed to remove non-target and/or non-recyclable materials;
- the cost of disposing of any contamination contained within a load;
- lower than predicted throughputs, leading to less efficient MRF operation;
- short-term falls in income for MRF-sorted materials shown to be contaminated; and
- long-term falls in income for MRF-sorted materials if industry perceives contamination levels to be high in the original mix.

When tendering for MRF services, it is worth considering the benefits of an appropriately structured contract focusing on high-quality recyclables and appropriate risk sharing. For more information, see the WRAP publication Approaches to material sales: A guide for local authorities.

4.4 Impact on reprocessors

When receiving poorer quality materials, reprocessors face five potential problems:

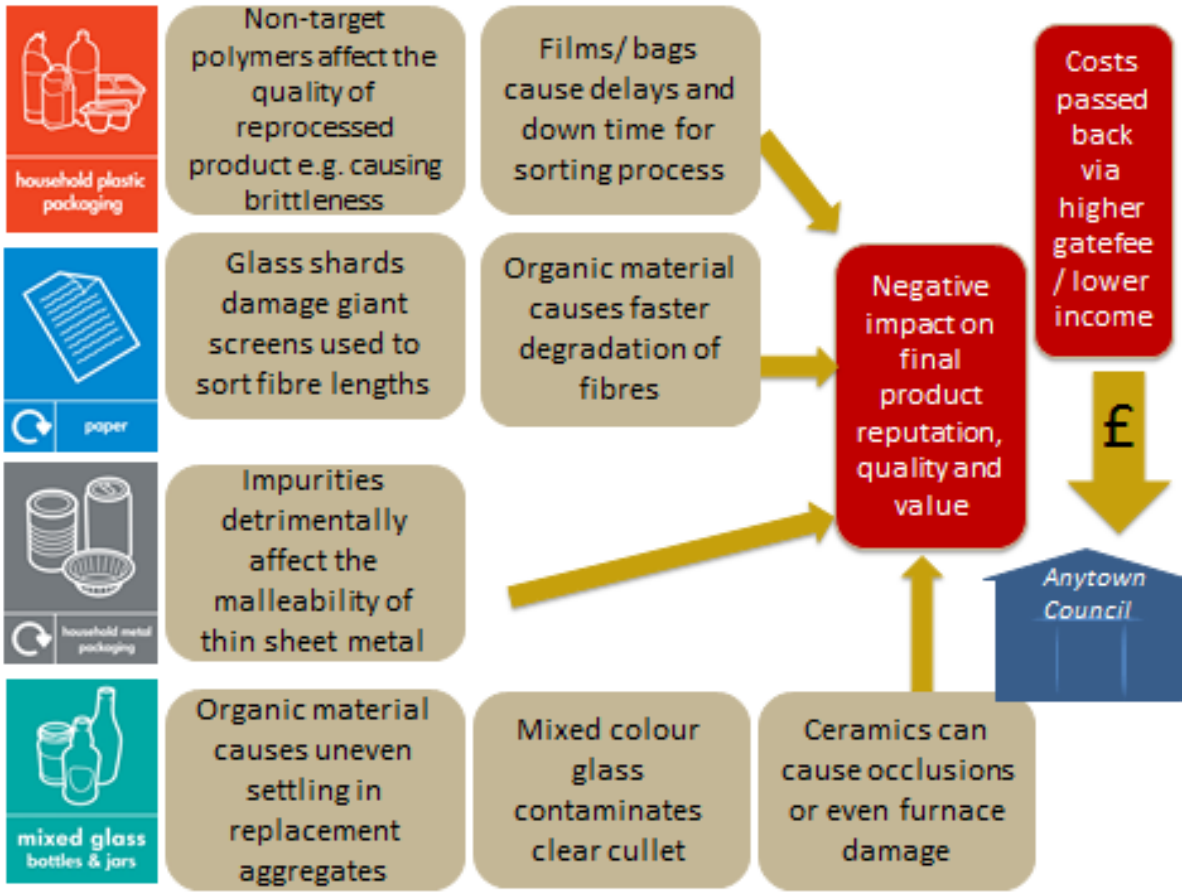
- increased sorting time and costs;
- damage to machinery;
- increased disposal costs;
- poorer-quality products; and

[3] *Please note that unlike previous years, in order to improve response rates , data collection was extended to March 2020. Gate fee analysis therefore reflects the 2019/20 financial year rather than the calendar year used in previous reports.*

- reputational damage due to supplying products made from secondary materials, of variable quality.

Specific issues relating to reprocessing differ depending on the material in question, as summarised in Figure 5 below. The four subsections below look in more detail at contamination with respect to the four key material streams.

Figure 5 – Reprocessing issues caused by contamination



4.4.1 Plastics

Estimates from WRAP's Plastics Market Situation Report, 2019 show that UK households produce around 1.53 million tonnes of plastic packaging every year. According to the Plastic Packaging Flow 2025 report published by WRAP in 2018, the categories of plastic packaging is divided between:

- bottles (41%);
- pots, tubs and trays (20%); and
- films and bags (26%).

Defra has set targets for plastic packaging recycling at 50% by 2025 and 55% by 2030. The UK Plastics Pact has set a more ambitious target of 70% of all plastic packaging effectively recycled or composted by 2025. This is particularly challenging given the need to maintain quality and keep collections affordable. Understanding why contamination compromises quality is a key step towards achieving the target. Neither local authorities nor householders need to become experts in polymers but being clear about what types of plastic can be included in collections will help cut contamination.

Usually, the main contaminants in bales of plastic bottles are non-targeted pots, tubs and trays. Tolerance to these depends on whether the reprocessor has access to a Plastics Reprocessing Facility (PRF) – a complex facility typically employing manual and optical sorting processes to sort plastics by polymer type - or whether they have an end market for the non-bottle fraction.

The number of local authorities collecting non-bottle fraction (pots, tubs, and trays) has grown from 67% in 2014/15 to 80% in 2018/19 in the UK, with WRAP playing a key role. The best advice is to check with individual reprocessors on the range of formats that they accept. The consultation outcome[4] "Consistency in recycling collections in England: executive summary and government response" showed support for the following proposals:

1. All local authorities should be required to collect a core set of dry recyclable materials at kerbside from houses and flats
2. The core set of 6 types of dry materials to be collected, including plastic pots, tubs, and trays.

As the range of plastics collected at the kerbside has increased, so has contamination from plastic films. Typically, these have a lower value than other plastics and, unless properly managed, can cause significant problems in sorting facilities as a result of:

- plugging apertures in trommels (the rotating drums used to sort materials);
- wrapping around machinery;
- mis-sorting with other two-dimensional material (especially paper); and
- inclusion with targeted plastics (sorting achieves 75-90% separation, resulting in secondary pellet plastic of variable quality and limited applications).

Whilst front-of-store collection points are proving one effective means of collecting plastic films, WRAP and the UK Plastics Pact believe that local authorities should be investigating ways in which to collect film at the kerbside. WRAP is currently liaising with waste management companies, recyclers and Government on how to best do this.

4.4.2 Paper and card

[4] *23 July 2019*

Although the amount of paper and board collected for recycling has fallen every year since 2013 mirroring the fall in fibres consumption, the UK still reprocesses rough half of its own secondary fibres. In 2019, almost 4 million tonnes were exported for recycling, and 3.1 million tonnes were recycled in the UK[5]. Trends in consumption, recovery and the recycling rate are shown in Figure 6 below.

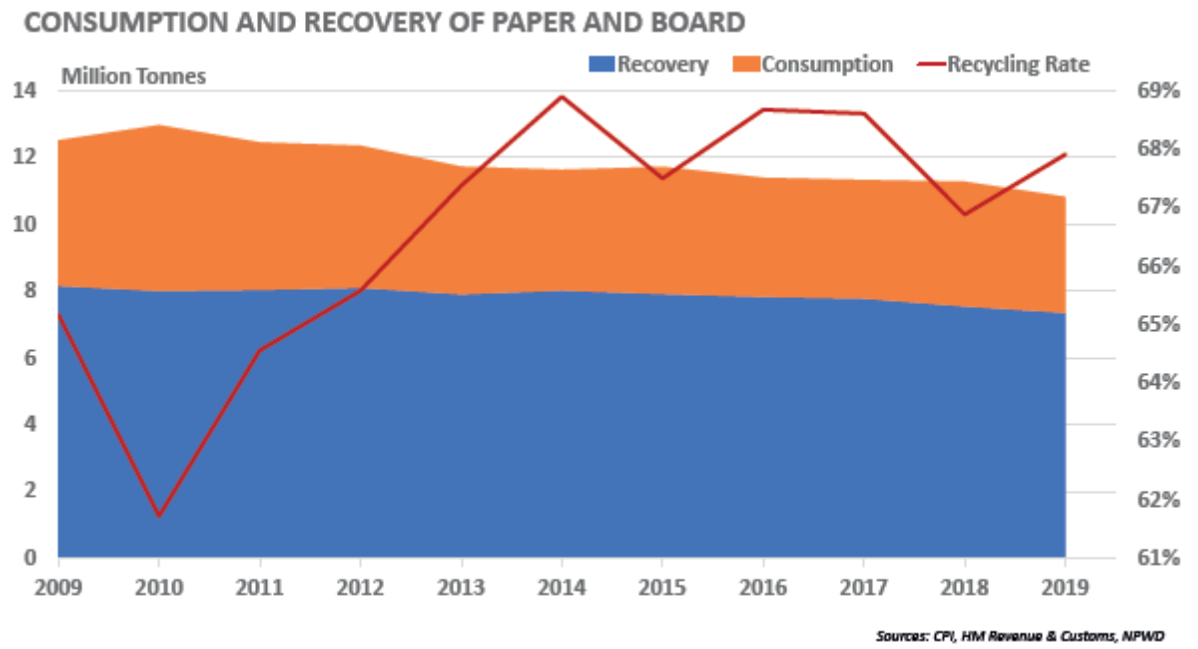


Figure 6 – Trends in consumption of paper and board

Secondary fibre is more susceptible to contamination than other materials, with a wide range of contaminants often present. These issues include:

Item	Issues
Glass	Abrasive qualities damage the large, expensive screens reprocessors use to separate fibres of different lengths
Organic material	Speeds up degradation of paper fibres, leading to loss of potentially recyclable material
"Stickies"	Glues and residues adhering to paper (envelopes, non-lick stamps, post-it notes etc.) need to be removed early during reprocessing as they can clog sorting screens, although they pose less of a problem than some years ago
Non-targeted fibres	Card, for example, would be considered a contaminant in a paper-only collection, but can also include kraft paper, coloured paper, wrapping paper, food packaging etc.

[5] *Confederation of Paper Industries*

Item	Issues
Plastics & metals	Generally, these are relatively easy to remove and can be mechanically sorted or handpicked if the contaminant is large enough; plastic film, however, is difficult to sort from light two-dimensional paper and card fractions and tricky to remove from reprocessing machinery
Moisture/ rainwater	Although technically not contaminants, rainwater and moisture adversely impact the quality of recovered paper and cause degradation

The quality standards for mixed paper (MRF grade and source segregated mixed paper grade) and hard mixed paper (HMP) vary between off takers and whether it's destined for domestic mills with or without a pre-sort/polishing, or export markets. As we've discussed, the more challenging the markets are and the lower the rebates being paid for fibres, the higher the quality the mills demand.

Mixed papers from MRFs and source segregated mixed paper are sold as two different grades, and the buyers recognise the difference in terms of value due to quality. However, whether it's mixed paper from an MRF source or mixed paper from source segregated, both may contain the "tolerated but unwanted contaminants" i.e. coffee cups, cartons, sandwich boxes, brown paper and brown paper bags, wrapping paper, Christmas cards etc.

The Confederation of Paper Industries (CPI) estimated in July 2020 that the complete shutdown of a paper mill – potentially necessary to repair or replace machinery affected by contamination – costs up to £100,000 per hour. The CPI also estimated in 2017 that each percentage point increase in feedstock contamination costs UK papermakers around £8 million annually. Based on UK paper mills using approximately 3Mt of recovered fibre per annum this equates to £2.70 per tonne, per percentage point rise in contamination.

As for other recyclables, the quality of the end product is key; the higher the contamination level, the bigger the impact on efficiency.

4.4.3 Metals

Generally, metals are highly recyclable. In terms of reprocessing, the key metals are aluminium (especially used beverage cans) and steel (food and drink cans).

Contaminated loads of secondary aluminium ingots increase the risk of a furnace explosion – a low-probability but high-impact risk. Tolerance to impurities in the final aluminium product depends on the end application: sheet destined for beverage cans must meet high quality specifications as it becomes ever thinner. If reprocessors cannot meet a specification, they are less able to pay good prices to local authorities, merchants or waste management companies.

Steel reprocessors are also reducing the thickness of their end product to meet the needs of cost-conscious buyers. As with aluminium, impurity levels in the material affect its quality.

4.4.4 Glass

The UK has adequate capacity to reprocess the majority of container glass (bottles and jars) collected, as long as the quality of the secondary material, 'cullet', is high enough. For glass of any colour, the critical contaminants are:

- ceramics;
- *Pyrex* and equivalents;
- flat glass;
- light bulbs; and
- inorganic materials (e.g. concrete, bricks).

Typically, none of these materials melt in the furnace, potentially causing expensive furnace damage. They can also cause visible inclusions, affecting the quality of the end-product. WRAP recommends that local authorities provide clear guidance to householders not to include ceramics and similar materials in any type of glass recycling collection. Although these are not a problem in secondary aggregate applications, it is easier to promote a single message to householders to ensure such materials do not end up in re-melt. Local authorities can play a key role by encouraging householders to recycle only targeted materials.

The extent to which contaminants create problems also depends on the value of the cullet. When markets are favourable, higher quantities of glass have been cleaned and sorted for closed loop. Additional contamination issues include:

- coloured glass contaminating clear glass. However, as the quantity of kerbside-collected co-mingled/colour-mixed glass has increased, more facilities have come on-stream that use mechanised optical sorting equipment to sort glass into colour streams; and
- surface contamination affecting colour sorting of MRF cullet. In 2010, an unpublished WRAP trial found that detritus on the surface of clear cullet led to incorrect sorting into green or brown glass fractions, substantially reducing the overall yield of good-quality clear cullet.

5.0 Legislation relevant to materials quality

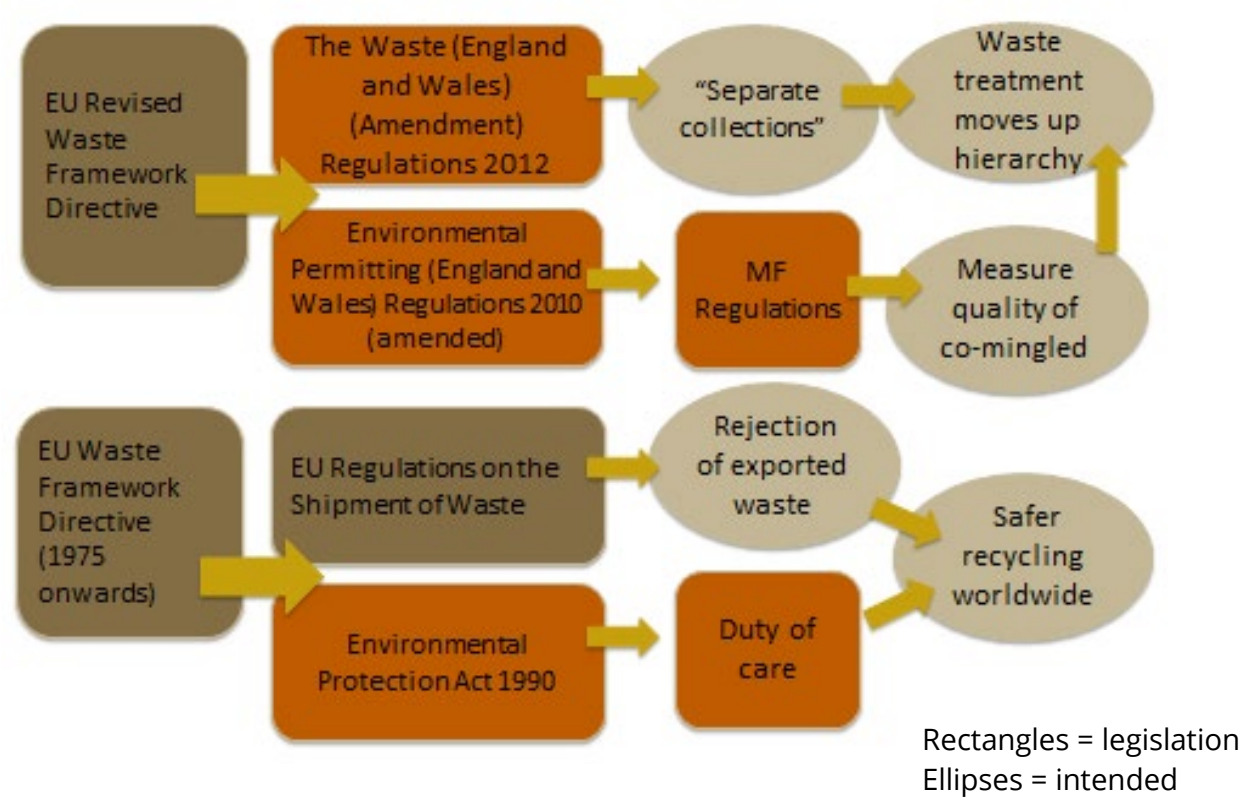


Figure 7 – EU and UK legislation affecting local authorities' responsibilities

5.1 EU Revised Waste Framework Directive

This clarifies key concepts such as the definitions of waste, end of waste, recycling, recovery and disposal. Article 4 of the Directive intends to push waste further up the waste hierarchy, taking into account the whole life cycle of products and materials. Article 13 focuses on protecting the environment and safeguarding human health.

5.2 The Waste (England and Wales) Regulations 2011 and Waste (England and Wales) (Amendment) Regulations 2012

These two regulations transpose key requirements of the above Directive.

- Regulation 12 – duty in relation to the waste hierarchy;
- Regulation 13 – requirement to collect the four key materials (glass, paper, plastics and metals) separately where doing so is "necessary to ensure that waste undergoes recovery operations in accordance with Articles 4 and 13 of the Waste Framework Directive to facilitate or improve recovery" (a useful resource pack is available to help you meet the requirements of separate collections, built around the 'necessity' and 'TEEP' – technically, environmentally and economically practicality – principles); and

- Regulation 14 – duty in relation to collected waste, with regard to keeping the four materials separate from other waste.

In light of these Regulations, you may wish service providers to produce evidence of sorting processes, quality levels, contamination rates, and end destinations.

5.3 Environmental Permitting (England and Wales) (Amendment) Regulations 2010/2014

These regulations provide the statutory framework to which organisations operating waste management sites and other potentially polluting activities should adhere, through the issuing of permits and associated checks from the Environment Agency (EA).

To help improve material quality, the Regulations were amended in 2014 and require the addition of a condition in the environmental permits of all qualifying MRFs. The Regulations (often referred to as the *MF Code of Practice*) set frequencies and quantities for both input and output material-sampling regimes. Testing individual suppliers' Mixed Waste Material (i.e. inputs), should allow you to build a picture of the quality of materials collected in your area and currently you can check this on the MF Portal. Different arrangements for accessing data should be in place after Q1 of 2021-22.

5.4 EU Regulations on the Shipment of Waste and the Basel Convention

These regulations require that export of secondary materials, anywhere in the world, is for recovery not disposal, where exported recyclates are properly separated for reprocessing and not requiring further sorting. The export of mixed wastes (waste considered as household waste or contaminated to such an extent that its environmentally sound management cannot be ensured) is usually always illegal unless (i) it can be undertaken in accordance with the notification procedure or (ii) the waste is considered a green list material.

From 1 January 2021 new arrangements for the movement of waste between the UK and the EU were introduced. The UK is a party to the Basel Convention and a member of the Organisation for Economic Co-operation and Development (OECD), and as such will continue to be treated in the same way as any other OECD country or any country party to the Basel Convention that intends to export waste to an EU country. The previous waste shipments procedures still apply. More information can be found on the gov.uk website.

A number of high-profile cases of unsorted waste have been highlighted in the national and trade press and on TV documentaries. Shipments of inadequately sorted materials have been returned to the UK, Australia and US from countries in Asia. Worldwide, legislation is in place that impacts on quality control overseas. For instance, China's 2005 regulations have been rigorously enforced since 2013 as a result of the country's widely publicised Operation Green Fence. A shift in market forces – with demand plateauing as the number of Chinese reprocessing plants peaked and supply of poorer quality materials exceeded this demand – resulted in more rejected loads than had previously been the case.

5.5 Environmental Protection Act 1990

According to Section 34 of this Act, 'good practice equates to local authorities satisfying themselves that wastes are treated in a manner that will not cause pollution of the environment or harm to human health'. This is commonly referred to as 'duty of care'. The 'duty of care' principle arose from work by the Royal Commission on Environmental Pollution in 1985, which highlighted that waste (or secondary materials) should be properly treated and disposed of and that this duty lay with the person or organisation that produced the waste. The duty is then passed from the producer to those who handle, transport or treat the waste, for instance a Local Authority or Waste Management Contractor.

Where recyclable materials are sent for reprocessing overseas, *The EU Regulations on the Shipment of Waste* tie in with the 'duty of care', such that everyone involved in the shipment (even a Local Authority sending materials for sorting at a MRF) must ensure that any waste is managed without endangering human health and in an environmentally sound manner.

5.6 Resources & Waste Strategy and the 2019 Environment Bill

In December 2018, Defra's Resources & Waste Strategy set out a proposal for kerbside recycling services. The proposal is for higher quality recyclables to be collected, by promoting more separation of materials at the kerbside, particularly the separate collection of fibres from glass. The 2019 Environment Bill aims to commence turning strategy towards statute to transform the way we manage our waste. The Bill proposes powers to ensure that producers take responsibility for the waste they create and introducing a consistent approach to recycling, impacting Local Authority waste and recycling collections. A further consultation exercise between Defra and industry and the public is expected in 2021.

Part B - Six-Point Plan to Reduce Contamination and Improve Quality

Introduction to part B

Part B of this guide is designed to help you consider your options to reduce contamination and improve quality. We provide ideas and insight on what has been used in the past. Ultimately, the particular actions your Local Authority chooses to implement will be unique to your situation. We suggest you use the information in Part A, on the impacts of contamination, to bolster your business case for action on contamination, along with local information on your authority's contamination issues.

A useful checklist

WRAP has developed a Checklist shown in Figure 8 that you can use to help you identify your contamination issues. You can download the checklist here to run it in Microsoft Excel. The checklist has been designed to help objectively review your own service, to see where you need more information and where to focus your efforts. It reflects section 6 of this guide.

A helpful case study

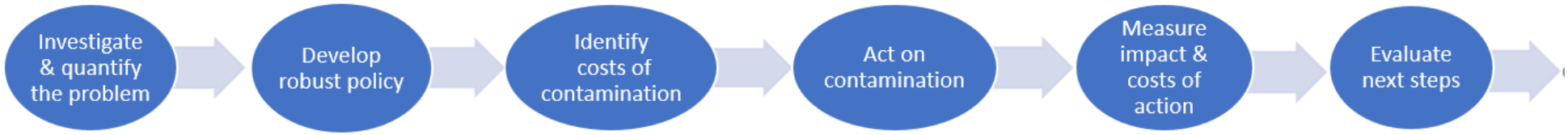
WRAP match funded a project with two Local Authorities from the Re3 Partnership, Bracknell Forest Council and Reading Borough Council, to act on contamination in 2020. Good practice set out in this guide was used to design and deliver the project. We have prepared a useful case study.

Other relevant resources

In 2020-21, Resource London (now ReLondon) published the findings of several Tackling Contamination projects with London Boroughs. Many of the principles in this WRAP guide were developed in collaboration with ReLondon.

	Action	How the information can help you	1 - Poor	2 – Below average	3 - Average	4 – Good	5 – Excellent
Do the maths	How many contamination were incidents recorded **per round (as a percentage)** in a given time period (incident = container reported as contaminated)? See section 6.1	If only a very low percentage of containers are reported as contaminated, it's likely residents don't know that they contaminate their bins. It's time to take action.	You don't have the information	Reporting rate is under 0.1%	Reporting rate is higher than 0.1% but under 1.0%	Reporting rate is higher than 5% but under 10%	Reporting rate is above 10%
Collection crew involvement	What can crews tell you about the hotspot areas of contamination?	If high numbers of properties put out contaminated containers in a certain area, you may wish to just focus on that area, which could make allocating resources easier. If contamination is a problem across your Local Authority, think about whether you want to tackle the worst areas first or learn some lessons by piloting in less challenging areas first.	No information available from crews, either because they don't know or you don't have lines of communication with them	There are lines of communication with crews but their knowledge is scant	Crew knowledge is patchy but approx. areas can be identified in your authority, where contamination feels a bit worse	Crew knowledge is good, poorer performing parts of individual rounds can be indentified road by road	Crew knowledge is very good. Poor performing areas of individiual rounds can be identified road by road, property by property
	What can crews tell you about the types of contamination?	The most common contaminants are usually food waste, textiles and the "wrong" plastics, but your problem items will depend on what your MRF will accept as recyclable and non-target. Information on contamination type can help you tailor communications and crew training.	No information available from crews, either because they don't know or you don't have lines of communication with them	There are lines of communication with crews but their knowledge is scant	Crew knowledge is patchy but focuses on the unusual or amusing items	Crew knowledge is good across the prevalence of both non-target and non-recyclable items	Crew knowledge is very good across the prevalence of both non-target and non-recyclable items
MRF input testing	What do MRF sampling results indicate in terms of differences between rounds?	Does information from the crews match what your MRF sampling tells you? You may wish to target action on a few key materials or across a wide variety of materials. What feels manageable for crews to act on and residents to understand?	No information available from crews verbally or via in-cab or crew sheets. No information on round by round sampling from MRF	Scant information from crews verbally or via in-cab or crew sheets. A few samples from MRF that can be tracked to individual rounds on a few occasions.	Patchy information from crews verbally or via in-cab or crew sheets. c.10 occasions since 2014 where you have samples tracked to individual rounds.	Good levels of information from crews verbally or via in-cab or crew sheets. 10-20 occasions since 2014 where you have samples tracked to individual rounds.	Very good levels of information from crews verbally or via in-cab or crew sheets. >20 occasions since 2014 where you have samples tracked to individual rounds.
Waste composition analysis	If you have any Waste Composition Analysis (WCA) data, what are the trends on common types of contamination?	Does information from a WCA match what your crews and MRF sampling tells you? You may wish to target action on a few key materials or across a wide variety of materials. What feels manageable for crews to act on and residents to understand?	No WCA data in last 10 years. And/ or No MRF data	WCA data available for similar Local Authorities collecting using a similar system but no discernible trends with MRF data	WCA data available for similar Local Authorities collecting using a similar system,some trends with MRF data	Local , recent WCA data available,some trends with MRF data	Local , recent WCA data available, trends with MRF data
Officer research	How many contaminated containers per round (or proportion of round) do you observe if you go ahead of the crews? What improvements could be made at the MRF/ WTS or, on collection rounds, if separate compartments are used on your vehicles?	If only a very low percentage of containers are reported by crews as contaminated, but you observe many contaminated containers, it's likely residents don't know that they contaminate their bins. It's time to take action. If you observe ineffective operations at the MRF/ WTS that could contribute to a contamination problem, what improvements could be made and who do you need to raise the issue with?	Crew reporting and your records differ by two orders of magnitude eg. 0.1% crew reporting vs 10% contaminated containers, from your own observations Very poor management observed at MRF/ WTS	Crew reporting and your records differ by one order of magnitude eg. 1% crew reporting vs 10% contaminated containers, from your own observations Poor management observed at MRF/ WTS	Crew reporting and your records differ by approx one third Acceptable management observed at MRF/ WTS	Crew reporting and your records differ by approx a quarter Good management observed at MRF/ WTS	Crew reporting and your records differ by approx 10% Very good management observed at MRF/ WTS
Analysing your findings	Who will analyse the findings for your contamination baseline investigation? Indeed, who will investigate?!	Ensure you or a colleague have time and "permission" to investigate the contamination problem. If you don't/ can't how will you know where to start?	No available appropriateresource	Very limited appropriate resource avaialbe	Some appropriate resource avaialbe	Good availability of appropriate resource	Plenty of availability of appropriate resource

Figure 8 - Checklist available to download to help you evaluate your contamination issues



6.0 Investigate and quantify the problem

6.1 Do the maths

How many contamination incidents have been recorded in the last 12 months in your Local Authority? By this, we mean where a crew has either issued a tag/ sticker on a container and/ or logged this via crew sheets or an in-cab device. Call this "A".

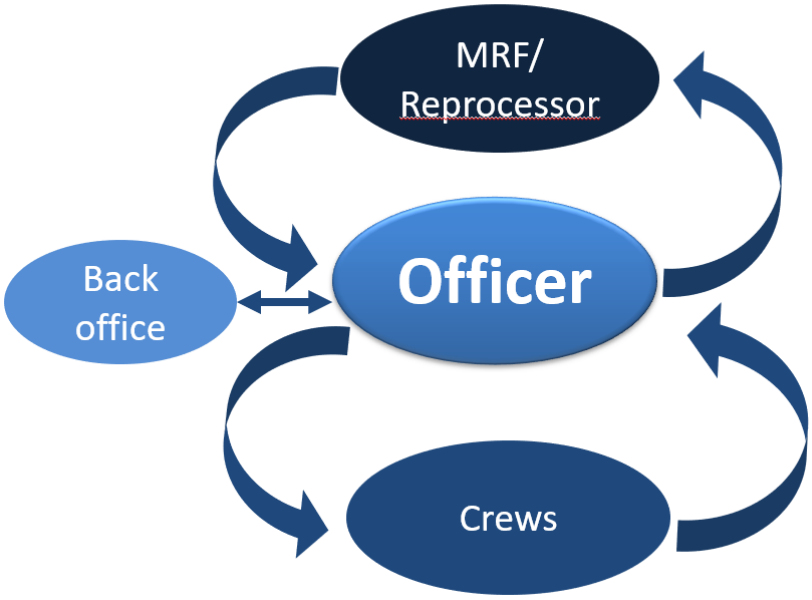
How many collections of recycling have been made in your Local Authority in the last 12 months? (*hint: number of kerbside properties x number of weeks per year you collect recycling e.g. 50,000 properties on a fortnightly collection cycle = 1,300,000 collections).* Call this "B".

What percentage of collections are recorded as contaminated out of the total annual recycling collections? (A÷B) x 100
WRAP has often found this figure to be very low (sometimes less than 0.1%) even when contamination rates are reported by a MRF as being as high as 20%.

Is the percentage of collections that are recorded as contaminated very low? How effective do you consider the recording of contaminated containers to be in your area? The Excel checklist provides some indicative rates that you might find helpful.

6.2 Sources of information

Ultimately, contamination is a 'people' issue, revolving around understanding, motivation, and perceptions of all those in the chain. Investigating and quantifying the problem of contamination requires effective lines of communication between collection crews, Local Authority staff within the waste management team, off-takers and reprocessors. As a Recycling Officer or Waste Manager, you can plug into the communication/feedback loops to obtain useful information. Ensuring these loops are not burdensome to those involved will, of course, be vital to ensuring their long-term value.



6.2.1 Collection crew involvement

Collection crews can play a critical role in helping you establish whether contamination is a problem. They will have more on-the-ground knowledge than anyone else. They should know the best and worst patches on their rounds, the better performing rounds and the types of contamination commonly found. Talking to people directly will help you frame your questions as you wish and explore responses and ideas.

6.2.2 Waste composition analysis

Waste composition analysis is the most robust way to assess contamination, but it can be time-consuming and costly. For detailed guidance on how to conduct such an exercise, see WRAP's Monitoring and evaluation guidance: Monitoring contamination chapter.

6.2.3 MRF input testing

Detailed breakdowns of input materials received at MRFs may help highlight contamination issues. You may be able to agree on an arrangement for additional sampling of materials (above the minimum requirement set out in the regulations) that allows you and the MRF to build up a picture of input quality. Some contracts allow Local Authorities to request additional samples to be analysed free of charge.

It is worth noting that WRAP's funded action on contamination project with two Local Authorities did not demonstrate an uplift in MRF input quality. This is despite an increase in tagging and recording of contaminated bins by crews on both Local Authorities' target rounds (see Appendix Three).

We recommend that sample weights are increased for an action on quality project, to say, 500kg. Such a sample size might smooth out the impact of one-off instances of heavy contamination within individual samples e.g. shoes, WEEE, clothing, crockery, wood, bricks/rubble etc. It is not possible to say exactly what the threshold is for a sample weight to be unaffected by heavy contamination, but for our project, 9kg of shoes (i.e. 5% of one sample's weight) was sufficient to skew the results.

Alternatively, the frequency of sampling could be increased, by extending the duration of a project. This could increase the confidence that there is an observable difference between the pre-pilot and pilot waste composition data. It is not possible to say exactly how many samples would be needed to achieve this, but 3 vs 5 data points (pre-pilot vs during pilot) was insufficient in our study. We do not have evidence on which to base the following recommendation, but consider that 8 samples before and 8 samples during a pilot may provide better quality data.

6.2.4 'Back office' activities

With data on contamination potentially arriving from collection crews, MRFs and other sources, the onus will be on the 'back office' or administrative functions, in your authority receiving, sense-checking and collating this information to prepare it for analysis. This will obviously require appropriate resources to be in place to fulfil this range of requirements.

When requesting data from external sources (MRFs, reprocessors etc.), remember to ask for the information in a format you can analyse easily.

WRAP has found that local authorities often underestimate how much time is involved in collating data on contamination. Ensuring you provide appropriate resource for this important function is vital for achieving good quality recyclables.

6.2.5 Officer research

Nothing beats gathering your own evidence to improve your knowledge. Visiting the rounds is part and parcel of some, but not all, Waste and Recycling Officers' roles. If visiting rounds isn't something you normally do, we recommend you do and to do it regularly. How do your results of a few hours of inspecting recycling containers yourself compare with what is reported by crews?

In addition, we recommend that you make (a few) visits to your MRF and Waste Transfer Station, if your recycling is sent to either of these facilities. Observe how and where materials are received and stored. What likelihood is there for different materials to be

placed in the wrong areas or near to other materials, or from other suppliers such that mixing of materials streams/ suppliers takes place? How clearly are bays labelled? How well do operatives perform their roles?

6.2.6 Analyse your findings

Setting aside time to understand fully the nature and scale of contamination in your area is important. Identify resources to help you with this. It's obvious, but if you or a colleague don't have time and "permission" to investigate the contamination problem as a whole, how will you know where to start?

7.0 Develop a robust contamination policy

The point at which you would like your crews to act on contamination and the action that follows needs to be considered by Elected Members. This will form a vital part of a Contamination Policy, and we have produced a template in Appendix One that you may wish to adapt and use.

Many local authorities choose not to collect contaminated recycling containers as part of their Contamination Policy. Focus groups organised by WRAP to test recycling messaging have shown that if a container is left uncollected, householders like to know why. We recommend that contamination stickers/tags/cards tell residents why the container has been unemptied and provide details of common problem items. The householder is then usually required to remove the contamination, enabling the container to be emptied at a later date.

WRAP strongly recommends involving Elected Members if you choose to change your crews' work process and collection policies around leaving containers unemptied and issuing contamination stickers/tags/cards. Checks of recycling bins by Officers in our Case Study found up to 39% of them to be contaminated. If such a high percentage of bins were to be left unemptied, we anticipate this could be viewed negatively by the public, creating a situation which Members may wish to avoid.

To make tags and stickers effective, staff need to know when to issue them – i.e. exactly what you classify as non-targeted and non-recyclable material and exactly how much should trigger a tag or sticker being issued.

It is worth considering at what point you wish to engage directly with a householder to alert them that non-targeted or non-recyclable materials are regularly found in their containers(s). As well as an effective data management system, the approach may require Member agreement. Although labour-intensive, Recycling Officer visits are often the most effective way to convey clear messages in a non-threatening and encouraging way.

You also need to consider such key questions as:

- what do you define as contamination?
- how will you record and collate instances of contamination from an individual property?
- what balance of education vs enforcement feels appropriate for your Local Authority?
- how many instances of contamination are recorded before you make a visit?
- would a letter to the household be a more convenient interim step?
- how many instances of contamination are recorded before you send a letter – our pilot indicates letters cost c. £1.60 to generate including post, printing and administration time?
- when issuing *staged* letters to householders, where multiple instances of contamination have been recorded, what tone do you wish to strike for each stage of letter?
- at what point might you remove a container (e.g. after four contamination events) and how would you enable householders to manage their total waste if containment is removed?
- would alternative containers (e.g. clear sacks) provide a more effective way to check for contamination for certain properties?
- what type of enforcement activity would you be comfortable introducing and after how many instances of contamination, do you wish to alert residents to the possibility of enforcement?

8.0 Identify the costs of contamination

8.1 Cost of contamination toolkit

Any project to tackle contamination will require budget and staff resources, which may not be readily available. ReLondon has developed a Cost of Contamination Toolkit. The toolkit is designed to help you calculate the true cost of contamination in the recycling stream and thereby help justify why resource should be made available to tackle it. It also helps you gather in-depth service information which can be used for internal reporting purposes.

Users are required to enter information on their recycling services, which will include current actions being taken to reduce contamination in areas such as communications, collections, bulking and treatment. The toolkit is supported by a detailed user guide. The results created will be in a usable format and will include graphs and tables with cost per tonne and cost per household of contamination in the recycling supply chain. You can use the toolkit to report on the problem BEFORE you act on contamination and AFTER, to help measure the impact of your project.

Some LA's may not have a clear financial imperative to act on contamination, but wish to improve the quality of recyclables for reasons of sustainability, reputation or possibly to

place the Local Authority in a good position for commissioning a new material sales or sorting contract.

9.0 Act on contamination

9.1 Provide clear, positive information for householders

Communications are an integral part to any local authority recycling service and an essential component to reducing contamination in kerbside recycling services. There are many reasons why householders contaminate their recycling, including:

- a lack of understanding of what should and should not be put into the recycling container;
- confusion with regards the acceptability of specific materials e.g. plastic pots, tubs and trays;
- infrequent or poor communications from the service provider; and
- service changes.

In Appendix Two, we provide a Tackling Contamination Communications Benchmark Matrix. You might find it useful to benchmark your Local Authority's current communications, in the broadest sense, on contamination, to identify where your provision may need improvement. The matrix has rankings of 1 to 5 – worst to best – on areas such as:

- online;
- direct marketing; and
- social media. etc

WRAP has also developed 2- side template contamination information leaflet, plus a user guide that you can download from WRAP's Resource Library, then adapt to reflect your own collection services, shown in Figure 9 below. Note that the contamination leaflet is just that – and not a comprehensive service information leaflet.

Good to Know - Paper and Card - Individual images

Individual images - Good to Know Glass Bottles

Individual images - Good to Know Glass Jars

Individual images - Good to Know Metal Aerosols

Individual images - Good to Know Metal (Cans)

Individual images - Good to Know Plastics

Recycling around the home animation

What not to recycle from the Bathroom

What not to recycle from the Bedroom

Figure 9 – Templates for leaflets, common recyclables and videos on contamination

The templates are easily adapted in conjunction with images of recyclables that are also found in the Resource Library in the Good to Know section, see Figure 9. Templates allow for partners to adapt the materials to suit local situations, for example the addition of logos and contact details.

Also in the Resource Library are fun animated videos with What Not to Recycle which can be used for social media posts or on Council websites and are shown as screen-grabs in Figure 9. Recycle Now is constantly being updated with new materials and messages so do check the WRAP website regularly. WRAP also offer a wealth of guidance to assist and help you with your communications collated here.

For any local authorities undertaking a communications campaign, we'd recommend you read WRAP's Improving recycling through effective communication which offers practical step by step guidance to developing a recycling communications strategy and a methodical approach to behaviour change programme planning.

Even with messaging on recycling containers or packaging, information on Council websites or via social media, WRAP's Recycling Tracker 2020 strongly indicates that a leaflet is *still* regarded as the most prominent source of information for the population overall. Figure 10 shows the response to the Tracker Question: *Where would you say your knowledge of what can and can't be recycled comes from?* ***You have 10 points to allocate.*** *Put more on those that most apply to you and less (or none) on those that don't.*

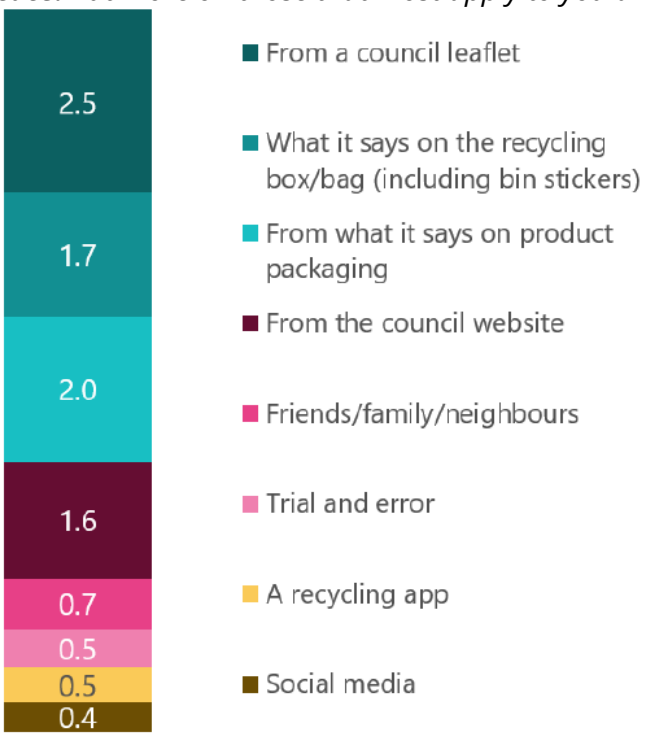


Figure 10 – Graph showing responses to a question in WRAP's Tracker Survey on common sources of recycling information

The importance of a leaflet to convey recycling messages is often missed, nonetheless we need to be mindful that different age groups turn to different sources for their information.

Population turnover can be a significant contributor to contamination levels; even in an area where population turnover is relatively stable, this can still easily reach 15%. This coupled with the above points can lead to significant levels of contamination.

A study by the Centre for Social Innovation and Keep Britain Tidy was published in September 2020. Findings from the study's online discussion groups tie in closely with WRAP's understanding of the issues gained from projects, The Tracker Survey and other engagement with Local Authorities. The key findings were as follows:

- *"Committed recyclers were some of the worst offenders for contamination…;*
- *People are not seeking out the information they need nor updating their knowledge…..;*
- *Communications that do reach people effectively tend to be proactive, disruptive and meet them where they are, e.g., rejected bins, feedback via bin tags/stickers, through-the-door communications;*
- *There is a significant amount of uncertainty and confusion about recycling that was generally attributed to confusing and conflicting messages across a range of sources, including the media;*
- *Contamination behaviours are often driven by feelings of guilt about waste;*
- *People do not understand that their individual behaviours have an impact and nor how 'the system' works;*
- *Bin space is driving contamination in certain households;*
- *Feedback loops are essential to changing to changing behaviour. This includes direct feedback to the household on their specific behaviour, as well as general feedback on recycling performance and issues; and*
- *There is genuine confusion about whether or not nappies are recyclable."*

9.2 The importance of a feedback loop for householders

Figure 11 – Embedded behaviours

ReLondon's Improving the quality of household recycling in London project and accompanying case studies provides clear evidence on the importance of a feedback loop for householders and how leaflets alone have limited impact on reducing contamination levels. One of their projects, recruited Recycling Quality Officers (RQOs) to undertake the task of checking bins for contamination and then tagging and recording contaminated bins, rather than leaving this to collection crews.

We know that 82% of people put items in the recycling that shouldn't be included according to WRAP's Recycling Tracker 2020. Yet each time the householder sets out their recycling container, it is almost certainly collected and emptied into the collection vehicle, as shown in Figure 11. Householders will seldom realise that they included something in the container shouldn't have been there.

If 'contamination' levels set in a sorting or material sales contract are not achieved, crews can provide a crucial link or "feedback loop" between the householder and the local authority. However, since the first version of this guide, WRAP has collated a stock of anecdotal information on some of the issues with crews providing a feedback loop:

- many collection operatives do not know why contamination is a problem;
- operatives may not know what happens to the materials they collect;

- operatives may not be encouraged to act on contamination, nor recognised/ rewarded if they do, conversely there are seldom consequences if they don't;
- acting on contamination may slow down rounds, which is at odds with a 'Task and Finish' culture;
- supervision tends to focus on ensuring missed collections are minimised; and
- agency staff are less likely to know about the issue of contamination or how to act on it.

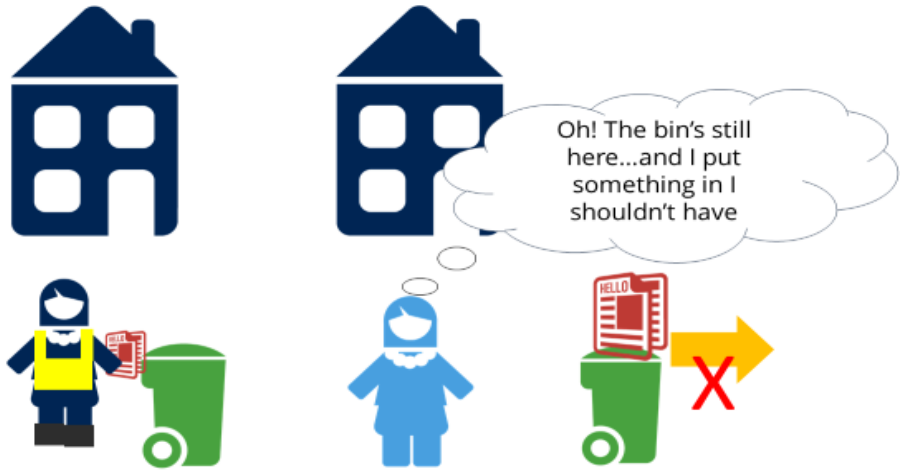


Figure 12 - Tagging and leaving recycling containers unemptied - a feedback loop

The whole process of the feedback loop is more than just the part where tags are issued on bins, shown in Figure 12 above. We discuss this in a webinar on *Contamination in Recycling* which you might find helpful to watch. The loop is designed to interrupt the usual pattern of recycling containers being emptied even when the recycling is contaminated. We strongly recommend that the feedback loop consists of:

- providing householders with an information leaflet (see section 9.1) shortly before crews (or RQOs) are trained;
- training staff on the impact of contamination and the importance of quality of recyclables – WRAP has the following resources that you may find useful:
    - crew training slides available in MS Powerpoint so they can be adapted;
    - a train the trainer resource pack in MS Word;
    - photos of contamination as a pdf; and
    - another webinar *Helping Crews Act on Contamination*.
- training staff to issue either stickers or tags on containers that are contaminated, being clear on what a "contaminated container" means;
- training staff to record the addresses where contaminated containers are found:

    - by using printed log sheets carried in the vehicle and completed by the driver; or
    - via a phone call / radio message to the depot; or
    - by using in-cab technology;
- most importantly, leaving containers unemptied[6] so that a householder should be encouraged to act and hopefully change their behaviours;
- ensuring that unemptied containers are logged as "locked out", whereby the resident cannot report the container as a missed collection to a call centre; and
- following through with your contamination policy, which may involve sending a letter to the resident or arranging a visit (see section 7) as appropriate.

9.3 Where to act?

We would advise that Local Authorities start small when acting on contamination. Select target rounds and demonstrate the impact of your project before rolling out across your Authority. By talking to crews and supervisors plus analysing round information from the MRF on input sampling, you should be able to build a picture of low, medium and high contamination areas. Depending on the views of your crews and indeed Members, you may wish to tackle contamination in areas that have "medium" contamination levels rather than "high" to begin with.

9.4 Effective back office processes

Neither a feedback loop, nor a contamination policy will work without back office processes in place to support the loop. We recommend that you have adequate administrative support to manage the following:

- inputting data from paper records, if required;
- processing and analysing data from in-cab devices (or spreadsheets created from paper records) to identify which properties are contaminating such that the next step in your policy is to be actioned;
- analysing trends in call centre contacts to ensure that unemptied bins are not causing other issues;
- generating an appropriate level of letter to a resident depending on the number of contamination incidents;
- logging any evidence of contamination if you wish to take an enforcement route;
- arranging officer visits to explain your recycling system;
- arranging for containers to be removed or replaced with clear sacks, if this forms part of your contamination policy.

We know from our 2020 pilot action on contamination project that these administrative processes, while manageable, do need appropriate resource in terms of skills and time.

[6] For box based collection schemes, leaving behind items of contamination in the box, but emptying the recyclables is possible. For single use sack collections, sacks can be left behind but may cause street scene issues as the resident will be able to use new sacks for their recycling.

9.5 Stakeholder management and change management of your approach to contamination

Figure 13 below shows a simple stakeholder mapping matrix to help you think about what type of engagement you might need to ensure that different stakeholders engage effectively with a project to tackle contamination. For instance, you may have an active group of residents who are concerned about sustainability and are strong advocates for good quality recycling. Thus, they are highly interested but have limited influence to reduce contamination in your Local Authority. Conversely, you may have Members who may be reluctant to have a robust contamination policy if that impacts the streetscene or negatively effects satisfaction with council services. In this case, they will have a broad range of interests, including balancing maximising the value of recyclate collected, while ensuring resident satisfaction with services and considerable *influence*.

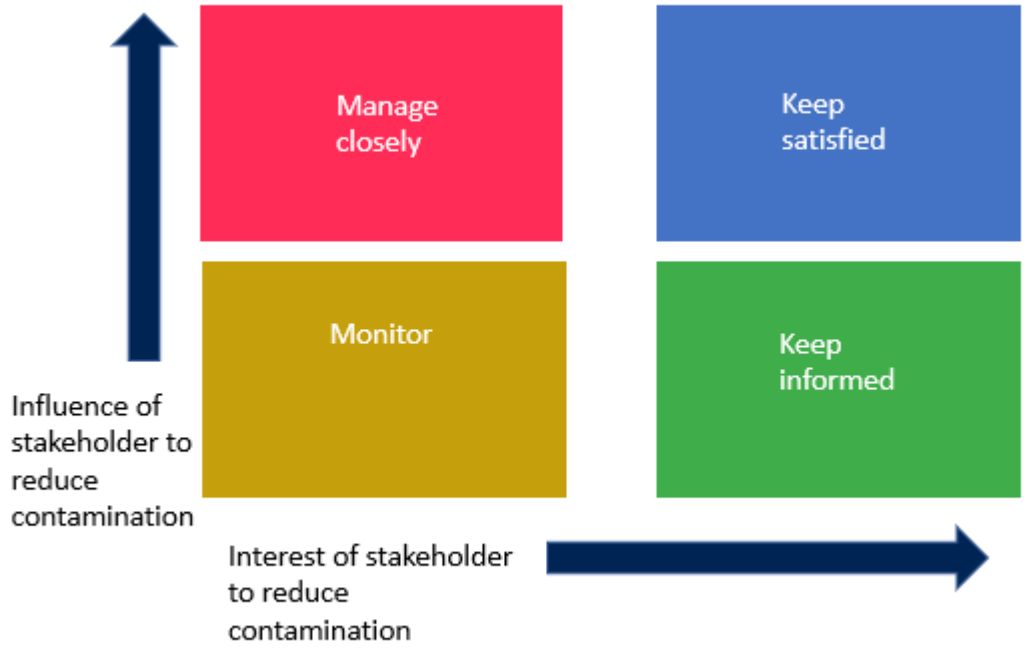


Figure 13 – Stakeholder mapping matrix

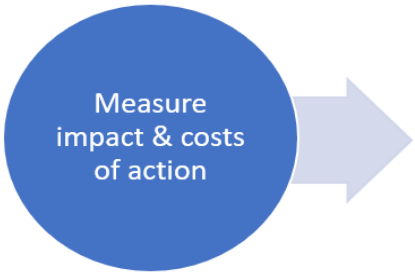
To "map" your stakeholders, consider who is which key groups, which may include:

- keen recyclers;
- residents for whom recycling isn't a priority;
- collection crews;
- elected Members;
- other Local Authority employees;
- MRF operator or recyclables off-takers; and
- Waste Transfer Station operatives.

Then reflect on how much influence and power they have to reduce contamination compared to how engaged or interested they are in having good quality recycling. Once you've completed this, it will help you plan your contamination project especially when

allocating resources to tasks, or finding ways to reduce barriers to progressing your project.

10.0 Measure impact and costs of action



10.1 What to measure

ReLondon's Cost of Contamination Toolkit (see 8.1) can help you measure the financial costs of 'acting on contamination'. Understanding your impacts can be measured in a number of ways and it's important to ensure you compare on a like for like basis before and after you act on contamination. We suggest that a number of metrics are used to understand the impact of your action, including at least:

- number of containers left unemptied and tagged at the kerbside by crews;
- MRF input quality for your targeted rounds before and during your project (you will need to liaise with your MRF to do this). Ideally this should be undertaken on 8 occasions ;
- number of rejected loads at the MRF on your targeted rounds;
- crew opinions; and
- container checks by a third party (or RQO) who goes ahead of the crews[7]. This step, although requiring additional resources, is strongly recommended. You should then review the efficacy of crew checks on contamination by comparing records on which properties have their containers left unemptied with records kept by the third party.

In WRAP's project with Bracknell Forest and Reading Borough Councils, described in the case study, we found that taking only three MRF samples before the pilot and five during the pilot was insufficient to indicate any change in quality. The project also employed a temporary RQO to check the top of recycling bins' contents. He took photos of bins that were contaminated and noted the address of the property on a 4G enabled tablet on a *Google Smartsheet*. The photos were shown to crews to help them understand which containers should be left unemptied and tagged. Rates of tagging increased after this information was shared with crews.

10.2 Understanding the context

When analysing data from action on contamination it's worth also considering contextual factors:

- has the service profile changed in terms of materials collected, collection day, personnel or container type?
- were collections missed due to bad weather or for other reasons?
- has there been any publicity (good or bad) in the press that might have affected how and what people recycle?

[7] *Unless you decide to employ other staff to check container contents and issue tags on contaminated containers*

- do your target rounds have areas with specific socio-demographic or other features that may effect levels of contamination (e.g. higher transience rates, numbers of students, numbers of flats, numbers of residents whose first language is not English)?

11.0 Evaluate next steps

11.1 The value of measuring impact

With finite resources, Local Authority Officers know that demonstrating impact can be helpful for accessing budgets. Members often want to know how a project will work by means of a pilot, particularly with contentious issues such as leaving recycling containers uncollected.

11.2 Decision making

Gathering objective information - comparing before and after - can help your Local Authority with decisions such as:

- what impact have your actions had on dry recycling quality and at what cost?
- what are the costs/ benefits of rolling out a wider tackling contamination programme?
- what are the implications of not acting on contamination (part A of this report may provide useful information for this)
- is the contamination policy fit for purpose?
- what resources do you need to provide for your "back office" function?
- what resources do you need to supervise crews to ensure the contamination policy is followed?
- what operational changes would be beneficial? and
- what types of communication need to be provide/ amended?

Evaluation is always an iterative process.

12.0 Supporting measures for action on contamination

All of WRAP's guidance and useful information on collections and recycling is collated on our website here.

12.1.1 Service Information Leaflets

If your Local Authority has not distributed service information leaflets for some time, we would recommend you issue this type of leaflet rather than one that just focuses on contamination, such as that shown in Figure 9. Clearly written leaflets, that are well-presented using carefully chosen images can be highly effective in increasing capture rates of recyclables and in tackling information gaps such as;

- what to include in recycling containers;
- what not to include in recycling containers;

- the benefits of recycling;
- what happens to recycling material once collected;
- the issues posed by putting materials in the recycling which are not targeted locally for collection.

WRAP has developed two options (2-page or 8-page) service leaflet templates for you to adapt for your own Local Authority.

12.1.2 Bin Stickers

Information bin stickers used in conjunction with contamination or service leaflets delivered to householders, are a good way to reinforce what materials can and cannot be recycled and what containers to use. Bin stickers, such as the example in Figure 14, are a reminder to householders t every time they use their container. There are various ways of rolling out bin stickers. Ideally, they should be applied to new containers or when replacement containers are issued especially following a change in service. If applied retrospectively, it is better if a contractor, council staff or collection crews do this, eliminating the need to rely on householders applying stickers themselves.

Figure 14 – Example of information bin sticker

12.1.3 Local Authority websites

Websites are an essential communications channel for local authorities. They are a particularly useful mechanism for householders to find out information about council services. We are aware that it's not always easy to provide visual information on recycling via Local Authority websites and if this is the case for your Authority, we recommend you provide a clear link to the Recycle Now Locator via our Recycle Now Widget. The locator enables anyone who is unsure about what they can recycle in their local area to find out simply by typing in their postcode. You can see an example of the Recycle Now Locator in Figure 15.

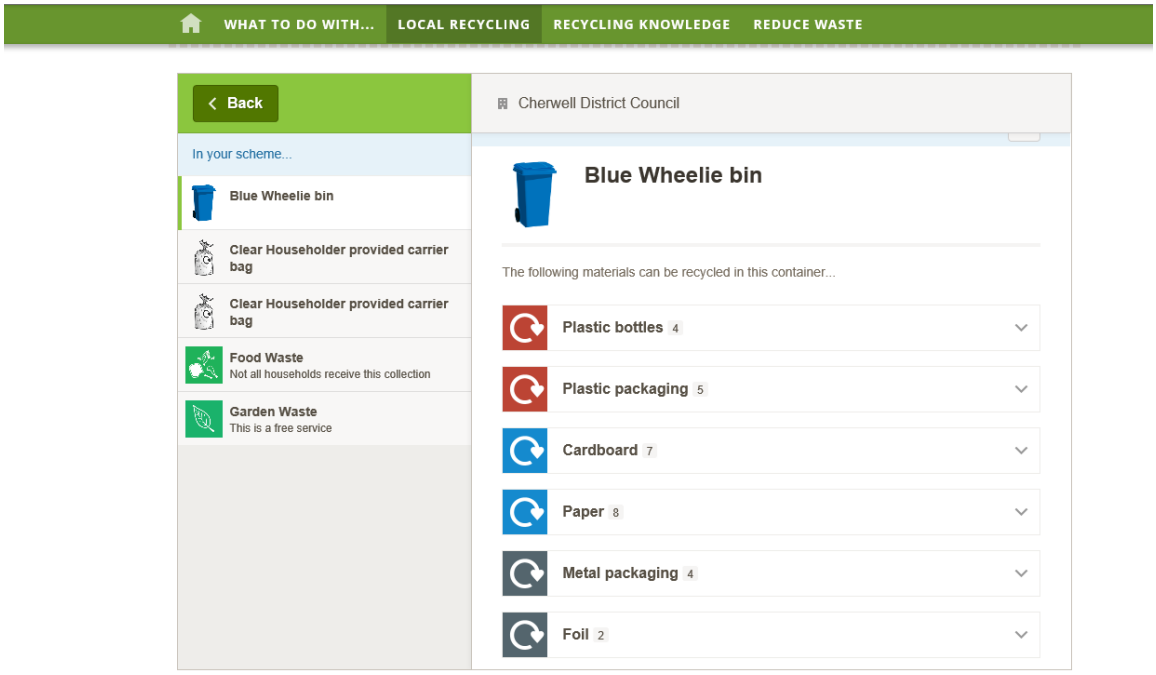


Figure 15 - Clear list of what can be recycled "at home" in Banbury on the Recycle Now Recycling Locator

A regular review of your recycling webpages is recommended to make sure they are up-to-date and easy to navigate. Relatively inexpensive changes to your website can help keep residents informed about recycling collections. Simple images showing recycling containers, alongside lists of what can and cannot be recycled can help to reduce contamination. Websites are also great places to provide your householders with further information on why recycling effectively is important e.g. what happens to your recycling once collected and how it is recycled.

13.0 Summary

Our understanding of the factors causing contamination in dry recycling is broadly similar to that we described in the first version of this guide in 2015. The key factor is confusion about what should be placed in recycling, compounded by a lack of feedback being provided to residents when they contaminate their recycling.

The scale of the problem of contamination has increased over the years and data from the MF Portal indicates that average levels in 2019 were at 16.6%. There are higher levels for both Non- Target and, in particular, Non-Recyclable materials since recording MRF input quality started in 2014.

The problems caused by contamination are not only operational, but also reputational, resulting in additional costs to all players in the recycling chain, often with Local Authorities picking up the tab for these costs. The costs passed back to Local Authorities have often increased in the form of higher MRF gate fees, or fewer opportunities for income sharing for materials sales. The future direction of travel for better quality recycling is clearly set out in the Circular Economy Package which the UK has committed to follow since its exit from the European Union.

Projects carried out by WRAP and by ReLondon with Local Authorities suggests there are a fairly limited number of options to tackle the main cause of contamination – householder confusion, that have been shown to demonstrate benefits. However, there are options on:

- what constitutes a "contaminated" container for your Local Authority;
- when to act;
- where to act;
- which contaminants to focus on;
- whether to engage crews to act on contamination or to use third parties;
- how robust the action will be, although this may affect its impact; and
- how long to act, although this may affect impact.

Preparation for tackling contamination is key, particularly with the options above to consider and the political implications of feedback to residents that is likely to involve not emptying recycling containers. Other important points to consider are who are your stakeholders and how to manage them and how to effectively measure the impact of your action. Planning ahead will pay dividends.

Appendix One - Example of a contamination policy

Contamination of Kerbside Recyclables

1.1 Contamination occurs when the wrong waste is placed in the wrong bin. It is important that the Council collects good quality materials for recycling. Putting items that cannot be recycled in recycling bins reduces the quality of our recycling and may mean that the entire load is rejected when tipped off. When this happens, the materials are sent to landfill, or Energy from Waste (EfW).

1.2 Where it is established that recycling containers are repeatedly not being used correctly, enforcement action outlined in 2.4 will commence.

Enforcement – Waste Collections

2.1 Section 46 of the Environmental Protection Act 1990 enables the Council to specify the following:

- Day of collection
- Frequency of collection
- Number, size and type of bins provided
- The waste streams allowed in each type of waste container.

2.2 The list of acceptable recyclables is set out in Appendix One of this policy.

2.3 Enforcement may commence where there is evidence of non-compliance and the recycling container contains items not listed in Appendix One.

2.4 Before considering taking enforcement action, the Council will adopt a phased approach to securing compliance with its waste collection policies as set out below. The enforcement process will normally only take effect where attempts to improve resident behaviour through education are unsuccessful.

Kerbside Collections

a) <u>Stage One</u>

Householders who are identified as failing to act in accordance with the Council's policies and procedures will be advised of the details of their non-compliance as well as what action/behaviour the Council requires of them.

Where a visual inspection of the recycling container contents shows that it contains one or more items from the list in Appendix Two, or three or more items from the list in Appendix Three, the recycling container will be left

unemptied and written advice will be provided (via a warning hanger or similar) informing the resident of acceptable wastes.

It will be the responsibility of the individual householder to remove the items causing contamination and dispose of them correctly. The Council will not return until the next scheduled collection.

b) Stage Two

Where a recycling container has previously been left unemptied and a further instance occurs (of the nature described above and within three months of the first), the householder will receive an informal warning from the Council. The Officer will contact the resident in person (to advise them of the issue and seek to determine the resident's reasons for failing to present their refuse correctly) and/or send a written warning setting out what action/behaviour the Council requires of the particular householder(s) and the consequences of continued non-compliance.

At the request of the resident, the Council may agree to empty the contaminated container as residual waste, on a one-off basis, to provide the householder with a 'clean slate' for future recycling.

c) Stage Three

On a subsequent occasion, a formal written warning under, or referring to, Section 46A of the Environmental Protection Act 1990 will be sent to the householders.

d) Stage Four

At the Council's discretion, any further breach may result in a Fixed Penalty Notice (FPN) being served on the householder and/or the recycling container being removed.

If the householder continues to present their refuse incorrectly following the issue of an FPN or fails to discharge their liability by payment of the FPN, then further FPNs can be issued and enforced.

Flats collections

a) Stage One

Where a small number of items of the type listed in Appendix Two or a significant number of items of the type listed in Appendix Three are visible within the recycling container, the container will be left unemptied. The managing agents will be informed of the nature of the contamination and advised of the procedure for dealing with subsequent contamination.

It will be the responsibility of the individual managing agent to arrange for (and cover the cost of) the bin to be emptied as residual waste (using third party or Council services as available) or to remove the items causing contamination. The Council will not return to undertake a collection of recyclables until the next scheduled collection.

b) Stage Two

Where a recycling container has previously been left unemptied and a further instance occurs (of the nature described above and within three scheduled collections of the first) the Managing Agent will receive an informal written warning from the Council, which will set out what action/behaviour the Council requires and the consequences of continued non-compliance.

If possible, an Officer will visit the flats in person to advise the residents of the issue and seek to determine the residents' reasons for failing to present their refuse correctly. A representative of the managing agents may also be invited to attend.

c) Stage Three

On a subsequent occasion a formal written warning under Section 46A of the Environmental Protection Act 1990 may be served on the management agency.

d) Stage Four

At the Council's discretion, any further breach may result in a Fixed Penalty Notice (FPN) being served on the managing agents.

If the managing agents fail to ensure that refuse is presented correctly following the issue of an FPN, or fails to discharge their liability by payment of the FPN, then further FPNs can be issued and enforced.

Wet Recyclables

3.1 The Waste Acceptance Protocol of the MRF Contract defines wet material (at a level which would adversely affect the onward sale of paper) as a form of contamination.

3.2 Unlike other types of contamination, this can occur when the right materials are placed in the correct container. The impact can remain the same as described at 1.1 however and high levels of moisture may mean that the entire load is rejected.

3.3 The items principally affected are paper and cardboard, as shown in Appendix Four.

3.4 Where a visual inspection of the recycling container contents shows that high levels of moisture are present due to saturation by rainwater (and action under stage

one above is not required due to the presence of other contaminants), the container will be emptied, but written advice will be provided (via a warning hanger or similar) providing the resident with guidance on how to keep their waste dry.

Appendix One – Acceptable Recyclables

- Set out your standard list

Appendix Two – Examples of High-Level Contaminants

- Bagged household waste
- Wires
- Nappies and sanitary items
- Scrap metal – including saucepans, frying pans, cutlery and vehicle parts
- Building waste – including rubble, soil and plasterboard
- Hazardous material – including chemicals, paints, oils, batteries, gas canisters and electrical items
- Clinical waste - including medicines, needles or syringes
- Animal carcasses
- Bulky items – including carpets, tents and furniture
- Polystyrene foam
- Food waste
- [Glass - if appropriate]
- Textiles

Appendix Three – Examples of Low-Level Contaminants

- Black plastic trays
- Plastic wrapped items – including wrapped magazines
- Cling film
- [Carriers bags - if appropriate]
- Wet wipes, tissues, used kitchen towels etc
- Rigid plastics – including toys, buckets and plant pots
- Plastic bottles containing high volumes of non-hazardous liquids
- Recyclable containers containing high volumes of food waste
- [Pots, tubs and trays -if appropriate]

Appendix Four – Examples of Items that may be Treated as Contaminants due to Excessive Levels of Moisture

- Wet paper and cardboard – including Newspaper, Magazines, Junk Mail, Catalogues, Brochures, White Office Paper, Cardboard, Packaging Board, Envelopes, Telephone Directories, Paper Back Books

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Appendix Two - Tackling Contamination Communications Benchmark Matrix

Methods	Activities	Rankings				
		1 - Poor	**2 – Below average**	**3 - Average**	**4 – Good**	**5 – Excellent**
Comms planning		No comms plan in place for the year; individual campaigns or activities have no written plan.	No comms plan in place for the year; individual campaigns or activities have simple plans with deliverables and dates.	Annual comms plan produced with simple timeline and deliverables; individual campaigns have simple plans; they are not shared with wider council teams (e.g. comms).	Annual comms plan produced as part of overall council planning round, including timeline, deliverables and targets/measures; individual campaigns have targets & measures and are developed collaboratively with wider council team.	Planning annually in consultation with comms & wider council teams, Members, resident groups & other stakeholders as part of overall planning round; targets & measures at every stage; research & testing carried out for campaigns & fed back into planning process.

Methods	Activities	Rankings				
		1 - Poor	**2 – Below average**	**3 - Average**	**4 – Good**	**5 – Excellent**
Comms delivery		Comms delivered internally through recycling team; no specialist internal support from comms team; no agency support in place. Materials developed ad hoc.	Comms delivered through recycling team; no specialist internal comms support; agencies contracted to develop materials on ad hoc basis.	Comms delivered with input from comms team; agencies or internal specialists contracted to develop materials on ad hoc basis.	Comms and recycling teams work together to deliver campaigns; specialists contracted to develop materials in line with council brand and messaging priorities.	Comms & recycling teams work together to deliver campaigns; specialists contracted to develop materials in line with recycling comms best practice; messages & materials tested and adapted locally.
Comms evaluation		Comms not evaluated.	Individual campaigns checked for having taken place – i.e. leaflets distributed, doors knocked etc.	Individual campaigns checked for having taken place; some operational stats checked on a campaign-by-campaign basis.	Individual campaigns evaluated against smart scorecards (inc. comms measures); operational (tonnage etc.) stats checked against campaigns and focus areas; no wider research done with residents to check levels of awareness & compliance.	All campaigns evaluated against smart scorecard; annual research done with residents on levels of understanding & compliance; evaluation results fed back into planning process annually and for individual campaigns.

Methods	Activities	Rankings				
		1 - Poor	**2 – Below average**	**3 - Average**	**4 – Good**	**5 – Excellent**
Direct marketing techniques	**Leaflets and service calendars**	Leaflet / calendar provided only when service changes or when budget is freed up.	Leaflet / calendar sent annually. Doesn't encourage people to take action.	Leaflet / calendar is sent annually along with bin stickers / hangers. Encourages people to take action; includes contact info.	Leaflet / calendar is sent at least annually along with bin stickers / hangers. Encourages people to take action. Relevant contact info is included. Headline is simple and clear; has continuity of campaign identity.	Leaflet / calendar is sent at least annually along with bin stickers / hangers; adapted to different properties / neighbourhoods. Relevant contact info included. Headline is simple and clear; appropriate use of logos and images. Continuity of campaign identity. Leaflet translated where large population of non-English speakers.
Direct marketing techniques (...cont.)	**Bin stickers / hangers**	Not used.	Sent out to properties without letter or leaflet. Design is not very clear or concise.	Sent out with clear instructions; design is clear and concise.	Put on bins by crews to ensure everyone has them; design is clear and concise; backed up by extra comms (letter etc.)	Put on bins by crews; info & design is clear and concise; call to action can be understood without words; backed up and linked with extra comms.

Methods	Activities	Rankings				
		1 - Poor	**2 – Below average**	**3 - Average**	**4 – Good**	**5 – Excellent**
	Door-to-door canvassing	Door-to-door canvassing rarely carried out – only in response to major issues	Door-to-door canvassing is carried out annually to check against standard questions	Door-to-door canvassing takes place annually and is adapted to include relevant and timely questions. Feedback from residents is logged.	Door-to-door canvassing takes place annually and is adapted to include relevant and timely questions. Feedback from residents is logged and then addressed through further comms.	Door-to-door canvassing takes place in response to events, to develop positive responses to issues. Feedback from residents is logged and then addressed through further comms. Canvassing with interpreters where large population of non-English speakers.
Advertising	**Outdoor**	Sites selected are not in target areas or areas with high footfall, artwork has generic messaging and doesn't target specific audiences or behaviours	Sites selected are in target areas or areas with high footfall, artwork has generic messaging and doesn't target specific audiences or behaviours	Sites selected are in target areas or areas with high footfall, artwork has tailored messaging targeting specific behaviours	Sites selected have high footfall / passing traffic and will be seen by target audience. Artwork is striking and messages target both the audience and specific behaviours	Sites selected have high footfall / passing traffic and will be seen by target audience. Artwork should be striking to grab attention. Advertising sites are promoted on social media.

Methods	Activities	Rankings				
		1 - Poor	**2 – Below average**	**3 - Average**	**4 – Good**	**5 – Excellent**
	Digital	No digital advertising undertaken	Limited digital advertising undertaken using non-interactive banners on council website	Interactive advertising used on council website	Interactive advertising used on a range of locally relevant internal & external websites and blogs; engagement measured & reported on	Interactive advertising used on a range of local channels, including geo-locatable; engagement measured & reported on
	Collection vehicle livery	Routes selected are not in targeted areas, artwork has generic messaging and doesn't grab attention	Routes selected are in targeted areas, artwork has generic messaging and doesn't grab attention	Routes selected are in targeted areas, artwork has tailored messaging to support recycling team priorities	Routes selected are in targeted areas or areas with high footfall, artwork has tailored messaging to support priorities. Artwork is striking, legible and grabs attention.	Routes selected in targeted areas, artwork has tailored messaging and is striking. Images of livery are used on PR and social media to drive awareness.
	Transport advertising (buses, etc.)	Generic recycling message and low-impact artwork used on untargeted bus/train/tube routes.	Generic recycling message and low-impact artwork used on targeted bus/train/tube routes.	Specific recycling message in support of priorities used on targeted bus/train/tube routes; low-impact artwork	Specific recycling message used on targeted routes, with high impact artwork, timed to support major priorities & changes	Specific recycling message used on targeted routes, high impact artwork, timed to support priorities and using a call to action for measuring engagement

Methods	Activities	Rankings				
		1 - Poor	**2 – Below average**	**3 - Average**	**4 – Good**	**5 – Excellent**
	Press advertising	Unclear/generic messaging in advert, media outlet is not right for target audience, artwork is generic and not tailored to target audience.	Unclear messaging in advert, media outlet is not right for target audience; artwork is tailored to target audience and includes specific information about service.	Clear messages in advert. Simple artwork layout. Advertisement in local media outlet with specific information of service.	Clear messages in advert. Simple artwork layout. Advertisement in local media outlet with specific information of service. Media outlet appeals to target audience.	Clear messages in advert. Simple artwork layout and engaging copy (especially if an advertorial). Advertisement in local media outlet with specific information of service and call to action for measuring engagement
PR	**Press packs and press briefings**	No press packs or briefings provided for media contacts.	Press pack produced and issued to media – no verbal briefings for media contacts.	Press pack produced and issued to media and verbal briefings given to media contacts.	Press briefings and packs provided. Interviews with local media – print, broadcast and online. Media sell-in limited to key print/online titles.	Press briefings and packs provided. Interviews with local print, broadcast and online channels, with sell-in to wide range of print/online titles; regular follow ups with media contacts.

https://www.wrap.org.uk/local-authorities

recycle