Appendix 1: results of communal recycling trial

1. Background

1.1. From August to October 2018, a communal recycling bin trial took place in the Montpelier area of the city. The purpose of the trial was to identify potential solutions to reducing the high levels of contamination found in communal recycling rounds. Cityclean also took the opportunity to better understand how recycling can be made easier for residents and how recycling information can be presented in the most effective way.

1.2. The trial involved installing 29 green Dry Mixed Recycling (DMR) bins and seven red glass recycling bins, replacing the black containers. All bins were kept the same size and in the same locations. The bins served 1,761 properties and approximately 12% of the CM3 communal round.

1.3. Before the trial began, an information leaflet was sent to all properties on the roads affected by the trial. This detailed the purpose of the trial, pictures of the trial bins, the items that can be placed in each of the recycling bins, and how residents can provide feedback on the trial. An online feedback form was created for residents to share their feedback and #MakingRecyclingEasier was supplied for people to use social media to provide feedback.

1.4. Arrangements were made to sample the recycling from the trial area once a week. Weekly reports were provided by Veolia showing the recycling quality from the sample. Cityclean used a separate vehicle to ensure the contents were not mixed with the regular bins from the remaining CM3 round.

2. Trial findings

2.1. The results from the trial sampling are:

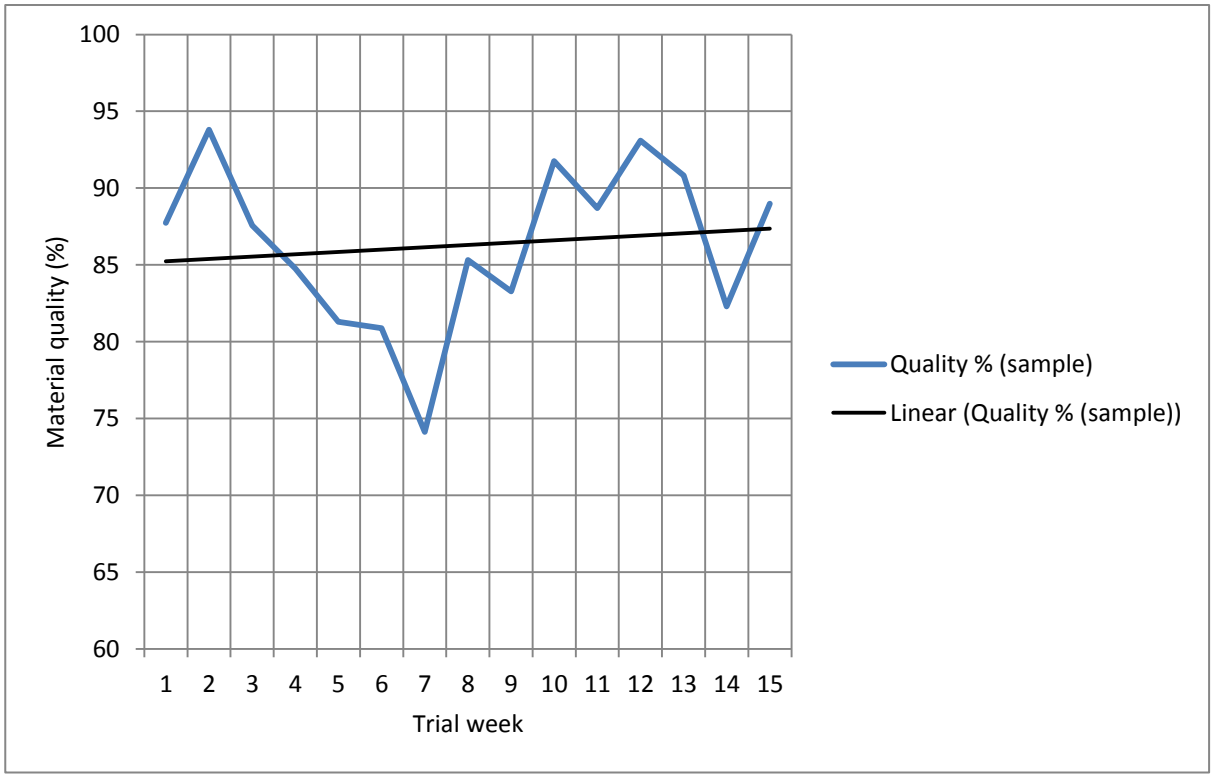
Period	Location	Number of samples	Average contamination (%)	Samples containing >10% contamination
October 2017 to July 2018	CM3	26	18.5%	23/26 (89%)
1 August to 6 November 2018	CM3: no change to bins	14	18.1%	12/14 (86%)
	CM3: trial bin area	14	13.3%	10/14 (71%)
	CM3: all bins	28	15.7%	22/28 (79%)

2.2. Following analysis with East Sussex County Council (ESCC), the following conclusions have been drawn:

- The trial bins show a lower input contamination rate (13.3%) compared to pre-trial (18.5%) and bins in the CM3 round that remained unchanged (18.1%)
- This improvement of 5.2 percentage points equates to a 28% reduction in contaminated tonnage in the trial bins
- The sampling results from the bins that remained unchanged in the CM3 area is only marginally better than before. This supports the view the improvement in CM3 is not simply a reflection of the background trend.

- Cityclean and ESCC were surprised at the frequency of exceptionally contaminated bins – the highest was 44% on 23 October (existing design of bin); the highest for the trial bins was 26% on 14 September. This contamination may be due to residents leaving bags of general waste, unwanted household items and fly-tipping in the recycling containers. In some cases, residents were able to unlock to bins to deposit bags and large items, bypassing the aperture

2.3. The graph below shows the quality of the material during the trial. In weeks 2, 10, 12 and 13 contamination levels were less than 10%, with 93.8% the highest quality in week 2.



2.4. As the trial progressed, some changes were made based on feedback from residents and crews. This included:

- Placing “no glass” stickers on all the green DMR bins; this however, did not lead to an improvement in reducing the contamination of glass in the mixed recycling bins (week 6)
- Replacing triangle locks to padlocks with provide extra security and reduce the likelihood of contaminated rubbish being placed in recycling bins (week 8)
- Removing the brushes from the DMR bins; this did lead to an increase in recycling quality and an increase in the weight of recyclable material in the bins (week 12)

3. Feedback

3.1. A drop-in session was held during October, inviting residents of the trial area to share their feedback about the coloured bins and updated bin signage with Cityclean officers. Surveying also took place in the trial area.

3.2 Results from the survey include:

- 33% strongly agreed or agreed that the different colour bins used in the trial has helped / would help them recycle more; 37% strongly disagreed or disagreed; further analysis suggests this is the actual colours used in the trial, rather than differentiating the colours
- 67% strongly agreed or agreed that the updated signage has helped them better understand what can and cannot be recycled in Brighton & Hove.

This demonstrates that the trial was partially successful in identifying potential solutions to reduce levels of contamination and identifying how recycling information can be presented in a better way.

3.3 Furthermore,

- 60% did not know they could recycle metal jar lids
- 57% did not know they could recycle aerosols
- 40% thought they could recycle pots, tubs and trays
- 33% thought they could recycle tetra-pak cartons

This demonstrates there is a significant amount of education and communication to be completed across the city.

3.4 Further notable feedback from residents, Members and crews include:

- While different colours are helpful because they make the distinction between the bins, the colours used in trial area are not suitable for conservation areas; darker, more muted colours would be more appropriate, or coloured lids only
- The brush on the aperture prevents recycling being placed in the bin; there were suggestions that the brush is removed or the aperture is larger
- Locking the bin is restrictive
- The updated signage is much clearer and easier to understand
- More communication on recycling is needed e.g. distribution of leaflets, what can and cannot be recycled, explain what contamination is and why it is a problem
- Some bins are too far away and better communication of location of recycling sites would be helpful e.g. signs on bins directing to relevant locations
- More frequent recycling collections would help increase the amount of waste sent for recycling

4. Citywide implications

4.1. The results of the trial provide insight into what the citywide implications are, including the financial impact.

4.2. 30% of DMR in Brighton & Hove comes from communal bins. This means that about 4,000 tonnes out of 13,400 tonnes of DMR is from communal bins. The average contamination rate across the communal bin areas is 14.1%, which equates to 567 tonnes of contamination in communal bins citywide. A 28% reduction in contaminated tonnage would reduce contamination to 408 tonnes, lowering the contamination rate from 14.4% to 10.1%.

4.3. However, it is a big assumption that the 28% reduction seen in a small sample area can be repeated in other communal bin areas. CM3 has greater scope to improve because it is more highly contaminated than other communal bin areas in the city. Assuming a smaller reduction of 20% would lower the citywide contamination rate for communal bins to approximately 11.3%, closer to contractual compliance.

4.4. Using the analysis to understand the financial impact is complicated due to the payment mechanism within the contract.

4.5. The key issue is process lost, where the system is not 100% efficient at extracting recyclable material. Some process loss is unavoidable, but greater levels of contamination cause more process loss by making the sorting process less efficient. The volume of process loss is significant – it can be as much as the amount of contamination present in recycling at the sampling stage.

4.6. The payment mechanism means that only a reduction in process loss results in a direct financial saving. Analysis by ESCC estimated that each one percentage point reduction in process loss would save around £5-10k through increased recycling and income from the sale of the material. However, it is difficult to quantify the improvement in process loss as a result of less contamination, making any savings figure hard to gauge.

4.7. The main benefit of reducing input contamination to below 10% is compliance with contractual requirements. There is a risk that if contamination levels are too high, communal recycling bins will be rejected resulting in a loss of £67k per annum due to loss of clean recycling in rejected loads.

4.8. Lower levels of contamination also helps to reduce the risk of end re-processors rejecting loads. This is particularly a risk for paper and cardboard. Whilst the immediate financial benefit appears small, the risk of recyclate being rejected is a real threat with significant financial consequences.

5. Next steps

5.1. The trial has provided the Project Team with a number of lessons learnt for future projects of this nature.

5.2. In addition, the results and feedback demonstrate further consideration is needed regarding the design of bins. The colour of the bin and / or lid is one aspect; further consideration needs to be given to locking mechanisms and the size of the aperture:

- unlocked bins makes it easier for residents to dispose of their recycling, but increases the risk of contamination
- a bigger aperture makes it easier for residents recycle, but again increases the risk of the recycling being contaminated

6.2 Using the feedback and lessons learned, a number of potential next steps have been identified. These are contained in Appendix 2 and will be considered for inclusion in the Increasing Recycling Project.