

## WASTE COLLECTION PILOT MONITORING

### 1. Background

The Environmental Services Programme (ESP) is reviewing future service provision, including waste and recycling services, to help the Council in achieving its aspiration of becoming the 'greenest city'. As a result of previous options modelling and assessment work, the Council has identified a potential future collection option, and since October 2020 has embarked on a waste collection pilot service provided to 3,000 households which have been issued with 3 x 180L wheeled bins (or 2 x 45L kerbside boxes when bins are not suitable) as part of a weekly residual and alternate weekly twin-stream recycling service.

### 2. Waste Collection Pilot Monitoring

On 17 July 2019 a motion was proposed at Cabinet which stated *"That the Council: in the knowledge of a newly procured contract to deliver a waste collection system for the Borough from 2023 calls on the Cabinet, having regard to the fact that discussions must start shortly about the nature of the lorries and equipment to be used in any tender procurement process, to launch a multi-faceted consultation involving the public to explore pilot schemes on the use of wheelie bins in place of plastic sacks and other solutions that understand the different challenges that different estates face"*.

In order to evaluate the efficacy of the Waste Collection Pilot, operational monitoring has been undertaken with the support of the Waste Collection Pilot crew and Serco's operational team.

Milton Keynes Councils recycling partner, Viridor, have undertaken additional targeted sampling and analysis of the composition of recyclables delivered by the Waste Collection Pilot recycling round to the Materials Recovery Facility ("MRF").

Satisfaction monitoring has taken place in the form of resident satisfaction surveys which are the subject of a separate report.

Recognising the different challenges that different estates face in collections terms, two streets were chosen per collection day to assess operational issues in greater detail. The following streets were selected:

Day	Area	Street	Comments
Mon	New Bradwell	Permayne	Mixture of elderly, assisted collections, bins and boxes
Mon	New Bradwell	St James	Terraces on bins
Tues	Brooklands	Collingwood Gardens	New MK
Tues	Moulsoe	Newport Road	Rural village
Wed	Monkston	Welbeck Close	Houses and flats
Wed	Monkston Park	Farringdon Street	"Regular"
Thurs	Lakes	Bala Close & Bala Way	Courtyard
Thurs	Lakes	Tarbert Close	Lakes Estate closes
Fri	Grange Farm	Gainsborough Close	Boxes (moved to bins)
Fri	Grange Farm	Proctor Rise	Difficult access

The following information has been collated for the pilot round to allow a comparison against the baseline collection service:

Operational Assessment	Quality Assessment
Number of accidents /incidents	Tonnage of refuse collected
Time/time and motion study	Tonnages of recycling, including glass, collected
Miles travelled	Contamination in incoming recycling sack materials
Number of logs of exceptions logged (e.g. contamination, "not out", blocked access)	Contamination in incoming fibre stream
Number of replacement bins boxes lids requested	Contamination in incoming containers stream
Number of missed collections	
Number of assisted collections	
Bins out / not out (set out)	
Participation monitoring	
Side waste placements	
Clustering incidents (residents)	
Pre-pulling / advancing incidents (Serco)	
Lids not fully closed	
Reports of bins not returned	

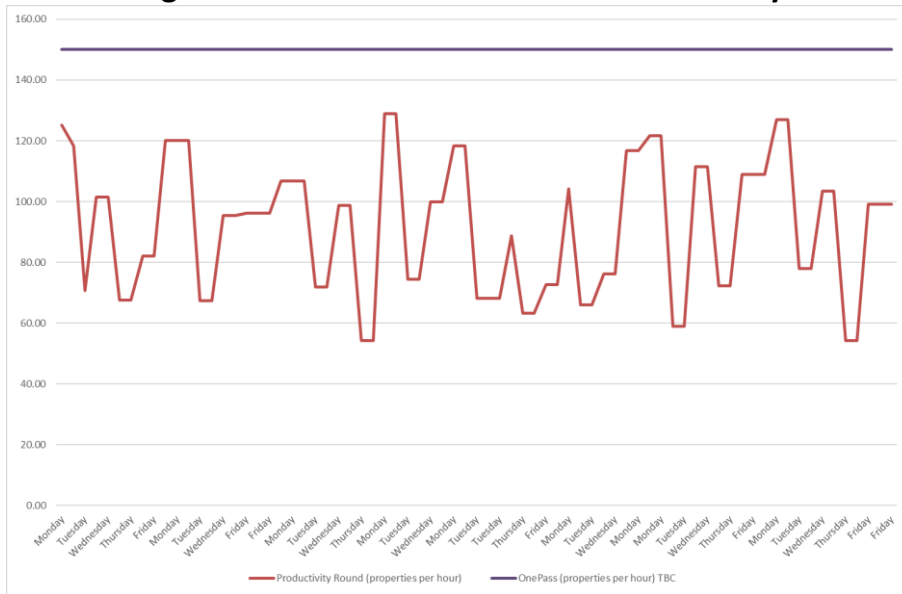
MKC and Serco recognise the importance of the opinions of the Waste Collection Pilot Crew tasked with delivering the service. A session has been held with the team to capture their thoughts, concerns and suggestions on how the pilot collection system could be further improved.

### 3. Productivity

It is widely accepted that a weekly waste collection in wheeled bins is less productive than a comparable sack collection. Containment of refuse and recycling in wheeled bins does lend itself to being more productive when frequency of collections is reduced e.g. fortnightly collections. Effective containment also provides service resilience when collections are delayed as per overruns at Xmas or due to COVID disruptions. During the recent delays to waste collections in Milton Keynes, the pilot round completed services without exception.

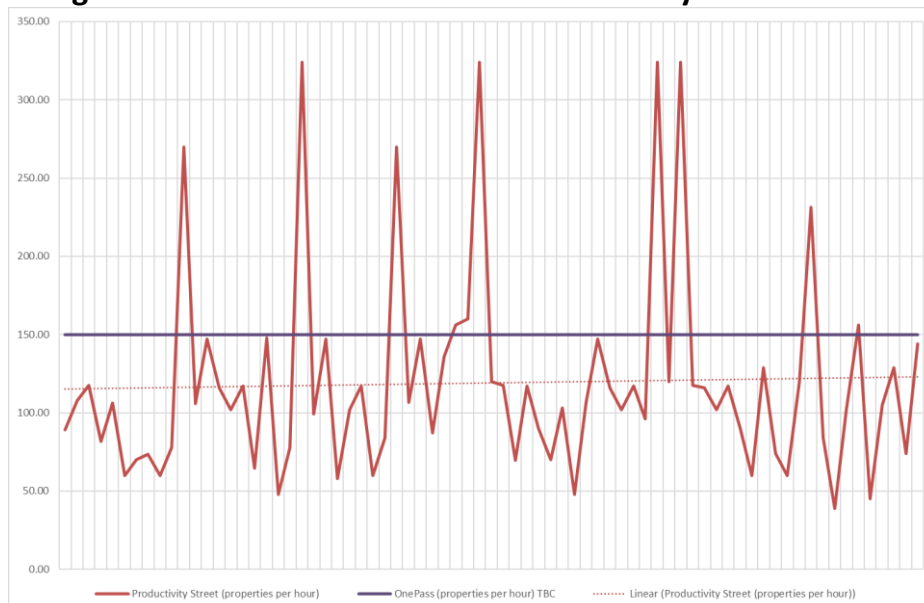
Distances travelled to and from the collection point to the disposal point and between properties can also significantly impact collection productivity. The average daily distance travelled during the pilot monitoring period was 60 miles with the minimum distance being 24 miles and the maximum being 111 miles on Tuesday's predominantly rural route. In addition to miles travelled the distances travelled by the crew to collect and return 2 bins per property per week affects the productivity. Thursday's collections in the pilot area were on the Lakes Estate with the crew having to work a significant distance between the collection point at residents boundaries to the vehicles and return the bins. Collection efficiency on Tuesday and Thursday was lowest at 55-75 properties collected per hour this compares with 150 typically on the OnePass service and 100 properties per hour on average for the Waste Collection Pilot.

**Figure 1 – Waste Collection Pilot Productivity**



Productivity is related to the number of rounds required and therefore the number of vehicles and crew. This directly inks to the service costs including vehicle operating costs, crew costs (including supervision) and annualised capital cost of the vehicles required to provide the optimum number of rounds. The modelling undertaken by WRAP on behalf of the Authority confirms that the productivity levels observed during the Waste Collection Pilot are commensurate with similar wheeled bin services and the assumptions used in the financial modelling in that approximately 1.5 crews would be required to collect 2 wheeled bins weekly compared with the OnePass system.

**Figure 2 – Waste Collection Pilot Productivity – Street Level**



The productivity assessment has identified some additional capacity on Mondays and Thursdays in particular.

#### 4. Set Out and Participation

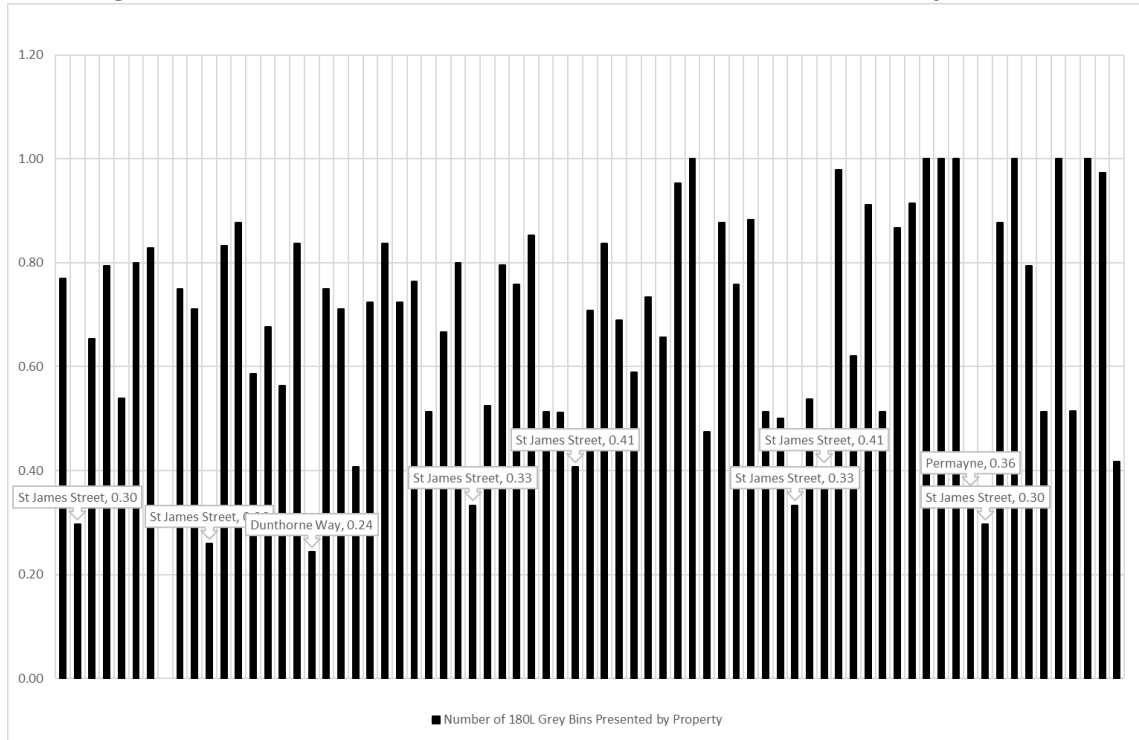
The set out and participation rates were monitored at a street level during the waste collection pilot. A “participating” household is one that sets out its recycling at least once in three consecutive collection opportunities. “Set out” refers to the percentage of households that put their recycling out for collection on a given week. A resident may participate in the refuse and recycling collection regime but only set their bins out every 2 or 3 weeks. A low set out rate e.g. not presenting a bin weekly, may indicate an excess of capacity/volume due to bin size. Conversely where there is an excessive amount of side waste (e.g. sacks placed out in addition to wheeled bins) this could suggest a lack of available capacity for a household.

As the data was not captured by individual property, an assessment of participation has not been made.

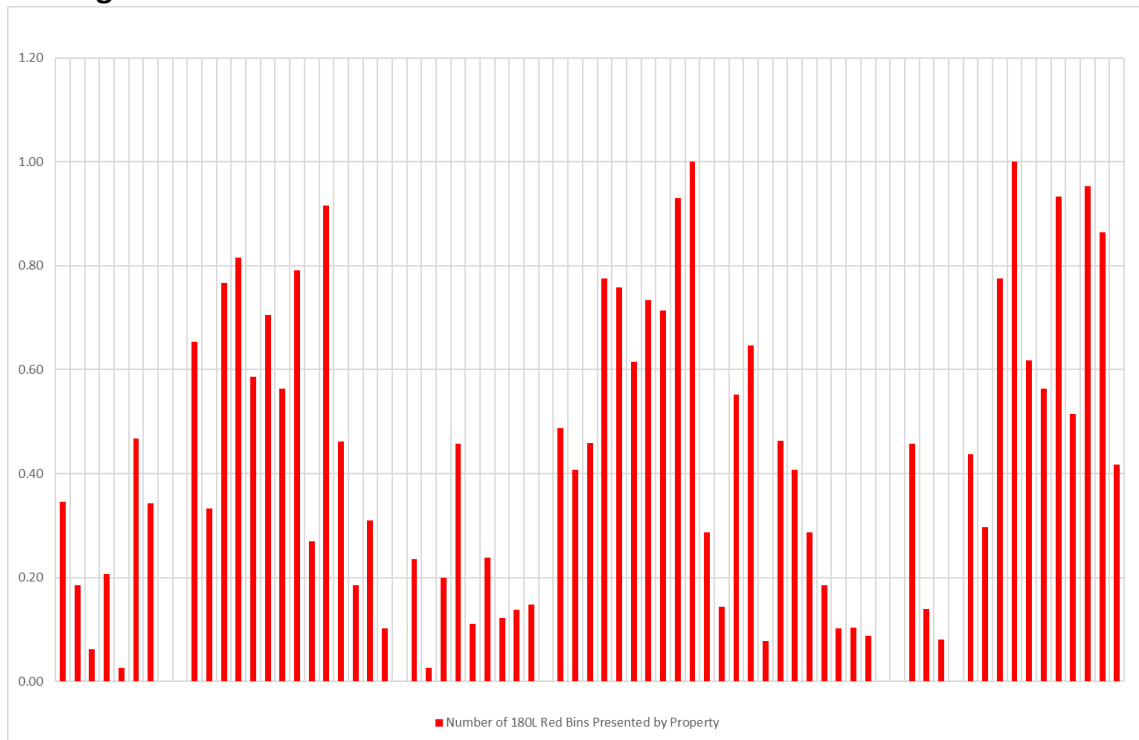
The Waste Collection Pilot was trialling a weekly residual waste collection in a 180L grey wheeled bin with a split weekly collection of containers in a 180L blue lidded wheeled bin and paper & cardboard in a 180L red lidded wheeled bin. The data suggests there was some initial confusion around the correct week to present recycling and many participants on the trial put all 3 bins out for the initial collection cycles (as can be seen in Figure 3 by the higher proportion of red and blue bins present on the same cycle). Compliance has greatly improved over the course of the trial as residents have become familiar with the split weekly system.

The set out of the weekly reuse container for those on wheeled bins has been around 0.8-1 bins per week with the exception of St James Street in New Bradwell which has a set out rate of 0.3-0.4 bins per property. St James Street is also showing as having a repeated issue with presenting side waste and the barriers to the use of wheeled bins should be addressed as it may reduce productivity, decrease recycling and could increase service costs.

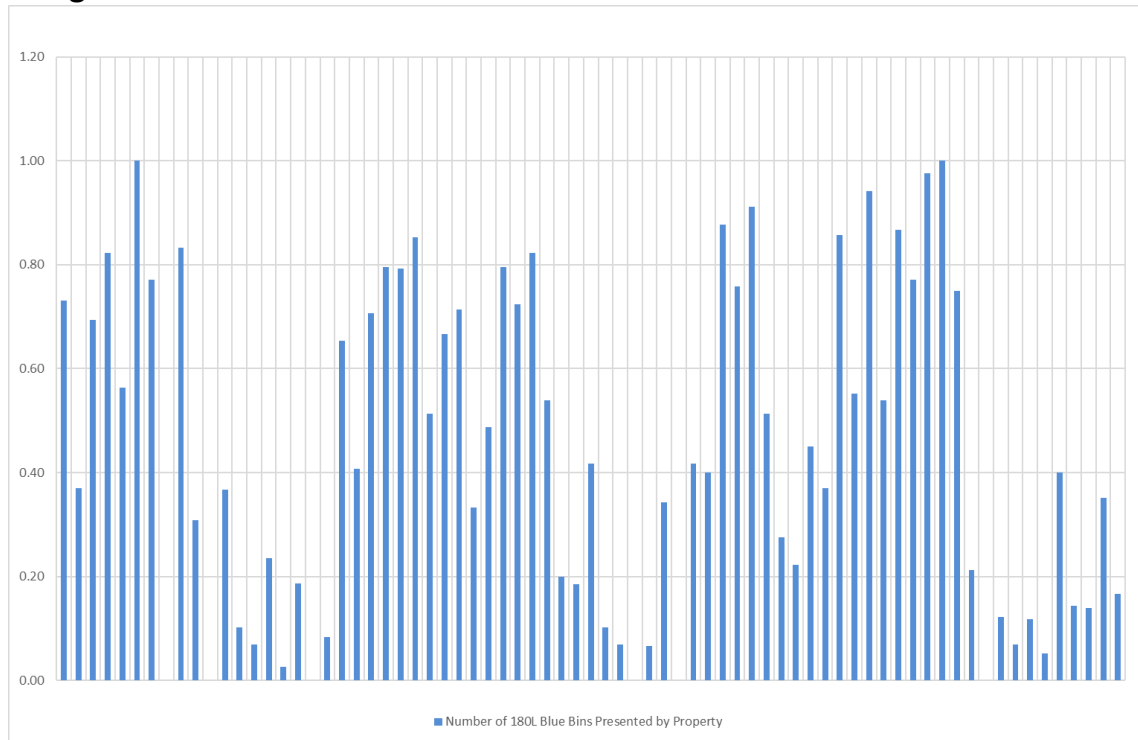
**Figure 3 – Waste Collection Pilot Set Out – Street Level Grey Bins**



**Figure 4 – Waste Collection Pilot Set Out – Street Level Red Lidded Bin**

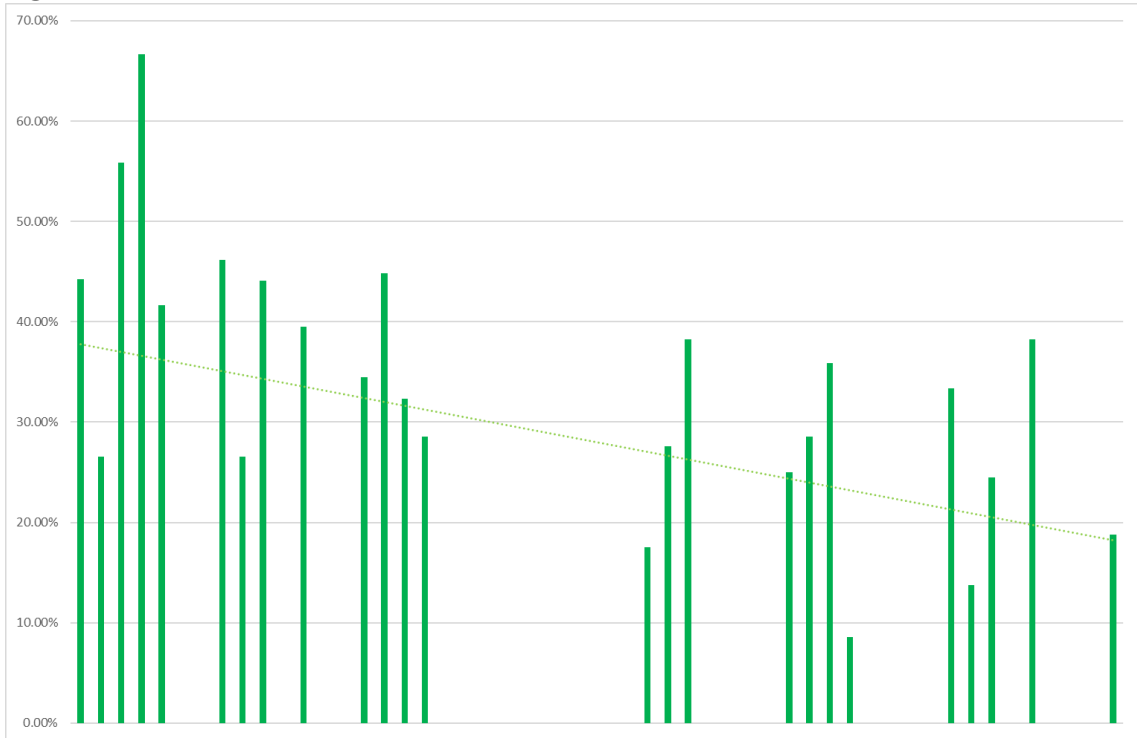


**Figure 5 – Waste Collection Pilot Set Out – Street Level Blue Lidded Bin**



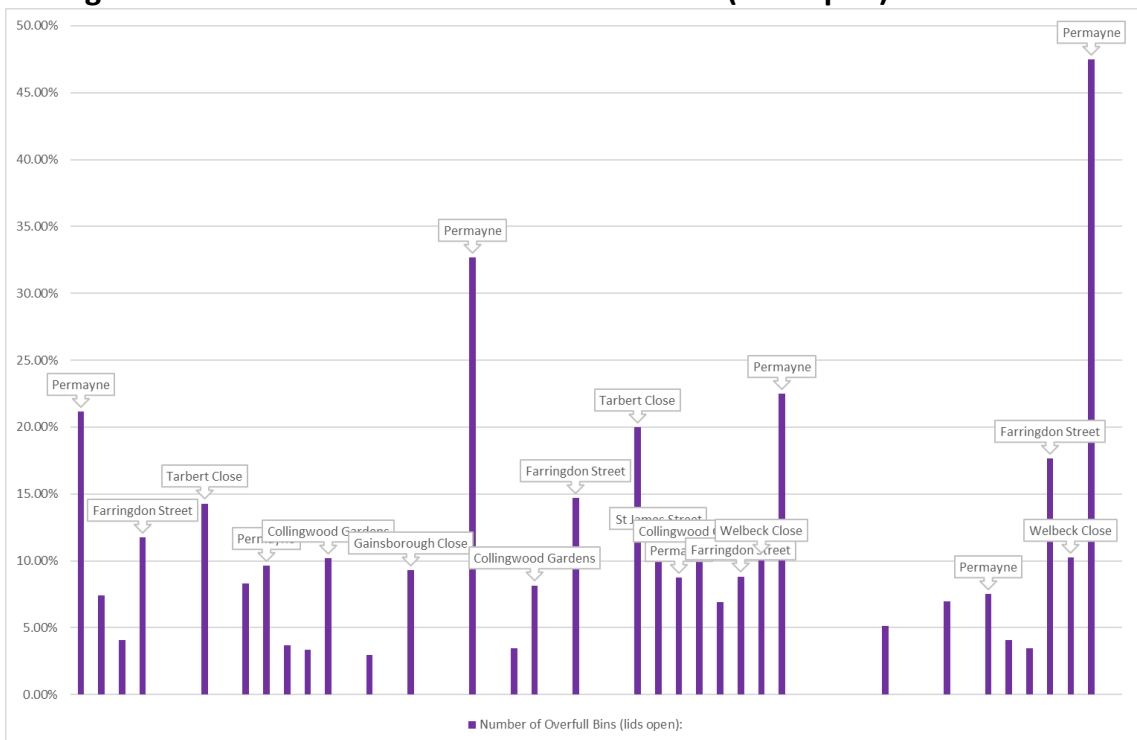
The participation in the weekly food and garden waste service was monitored at a street level during the Waste Collection Pilot. The set-out rate at the start of the trial was 40% (October) and reduced to <20% (early January). The average set out rate of green bins (140L and 23L combined) over the trail (whilst the green bin service was operating) was 29%. The set-out rate for garden waste is typically low in the winter months however it should be noted that the service is a combined food waste service and we would expect a higher set out rate all year round compared to a standalone garden waste service.

**Figure 6 – Waste Collection Pilot Set Out – Street Level Food and Garden Waste**



Sets of larger 240L wheeled bins were available on request after the initial 4-week term of the trial. Only a handful of requests have been made to date possibly indicating that the volume (e.g. bin size) provided has been sufficient. An assessment has been made at a street level of “bin lids left open” and additional waste presented for collection so called “Side Waste”.

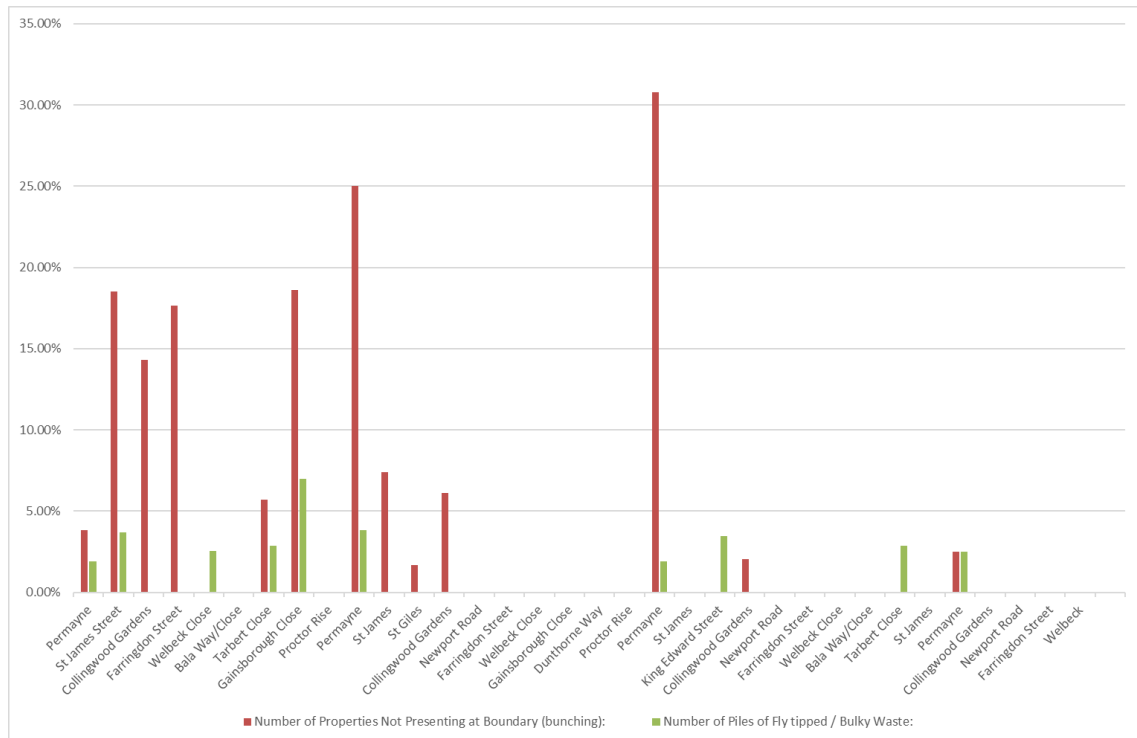
**Figure 7 – Waste Collection Pilot Overfull Bins (Lids Open) – Street Level**





The number of bins reported as overfull during the street level monitoring was 5%. Farringdon Street and Permayne featured on multiple occasions.

**Figure 8 – Waste Collection Pilot Not Presenting at Boundary / Fly Tipping Issues – Street Level**



The presentation of waste at the property boundary is key to effective service monitoring. The Engagement and Education team will work with residents on presentation issues identified during the pilot.

Additional waste presented alongside the wheeled bins is termed “Side waste”. A study by WRAP has found that *“the Council’s residual waste yield compares poorly to authorities with the same rurality, primarily as a result of a service that has no limitations on the amount of residual waste that can be presented by householders for collection”*. This suggests that reduction of the residual waste yield could be attainable through service and policy change.

The report by WRAP has demonstrated *“a restriction in the capacity available to households for residual waste results in increased recycling”* however it goes on to state that *“a strict policy of no side waste would need to be enforced. Allowing side waste could pose a risk of reduced recycling performance and increased collection and disposal costs”*.

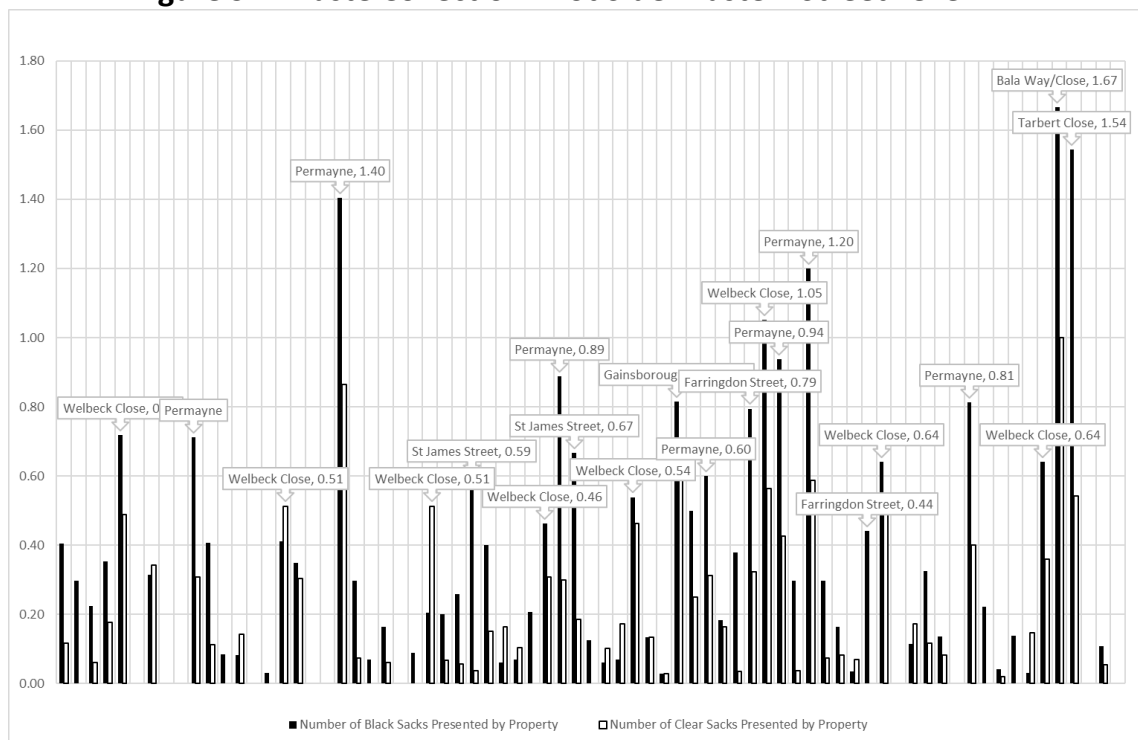
During the street level monitoring the number of refuse and recycling sacks presented alongside the wheeled bins was recorded. Presence of side waste typically demonstrates insufficient capacity, but we should bear in mind that this is a trial and residents may have just been getting use to a new collection system.

The average number of refuse sack side waste present per property was 0.35 sacks (equates to about 17L of capacity) and therefore the suggestion is that 180L on a weekly collection is suffice for most with a little consolidation (next bin size available is 240L). The average number of recycling sack side waste present per property was 0.18 sacks (equates to about 9L of capacity) suggesting that 180L of recycling capacity per week is manageable with a little extra “washing and squashing”.

Based on a feedback session held with the waste collection pilot crew, the number of properties presenting side waste impacted not only on their productivity but also was exposing them to unnecessary health and safety risks where a wheeled bin has been provided.

Of the street level properties assessed, Permayne and Wellbeck Close were identified statistically as a location where side waste presentation was common. An engagement programme will enure with areas identified through monitoring and through the information passed on by the crew.

**Figure 9 – Waste Collection Pilot Side Waste – Street Level**



## 5. Missed Collections

The number of missed collections recorded during the Waste Collection Pilot was low. The benchmark for a typical waste collection service is 50 missed bins per 100k.

## 6. Assisted Collections

Despite the initial concerns with regards the difficulty of wheeled bins over sacks and the fact that direct communication stipulated how to get assistance with waste collections, there have been no additional Assisted Collection requests in the Waste Collection Pilot Area.

In the recent consultation 71% of nearly 4.5k respondents thought wheeled bins would be easier to use than the current sack and recycling box system.

## 7. Volumetric and Quality Assessment

A separate WRAP study on the recycling performance in the UK revealed that, where the effective weekly residual containment capacity is increased, an associated decrease in dry recycling performance is observed (and vice versa).

In order for the Council to achieve higher recycling rates and meet its Greenest City ambitions, the Council will most likely need to reduce the capacity (volume and/or frequency) offered to residents for presenting waste in order to encourage residents to participate in recycling.

The current system does not encourage waste minimisation in that unlimited refuse and recycling sacks can be presented by each household. The lack of containment, unfettered access to recycling sacks and the non-provision of refuse sacks may contribute to poor quality recycling received at the MRF which ranges between 25-30% non-target or prohibited items.

To measure the impact of the Waste Collection Pilot on the quantity and quality of recycling, analysis was undertaken by Viridor of the composition of materials delivered to the MRF.

Weight data from incoming loads into the Milton Keynes Waste Recovery Park ("MKWRP") and the MRF have been used to work out the total volume of refuse and refuse and recycling collected for the remaining 18 kerbside rounds and the pilot round.

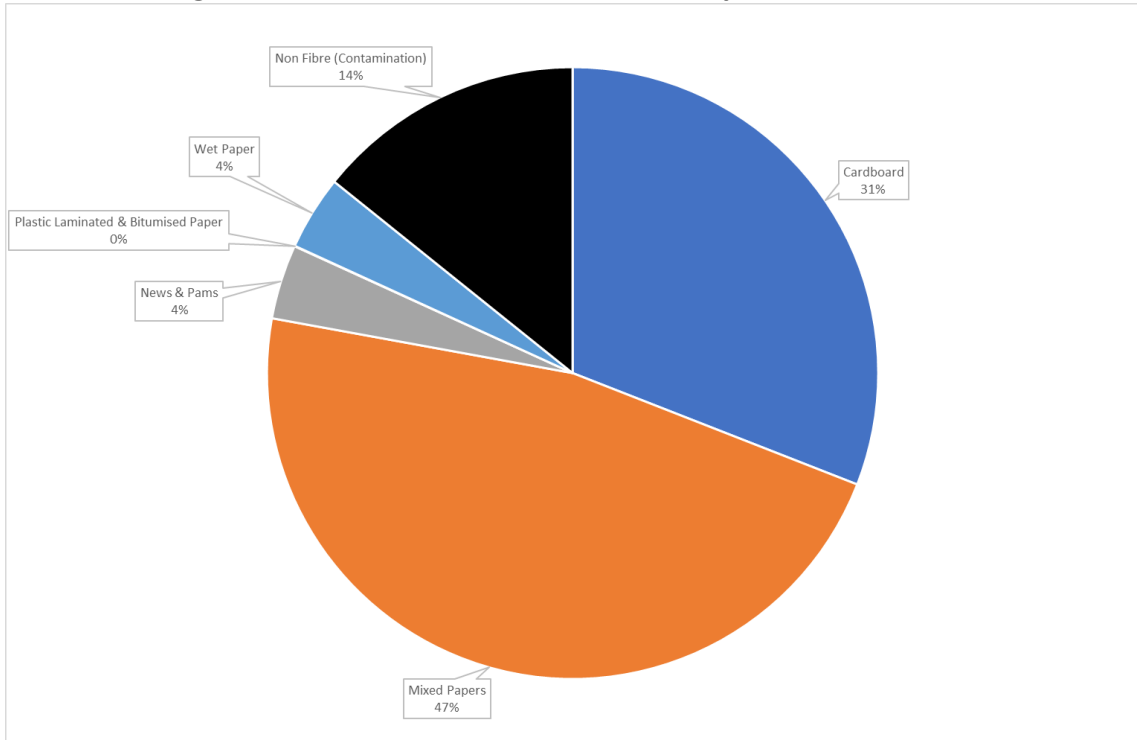
The volume of refuse collected from the non-pilot kerbside rounds was 10.1kg per household per week (525kg per household of refuse per year). The volume of refuse collected from the pilot round was 9.1 kg per household per week (473kg per household of refuse per year). This equates to a 10% decrease in the volume of refuse collected on the pilot indicating that containerisation can reduce the residual volume. An effective side waste policy could reduce this further, drive up recycling and save money.

The volume of recycling (including contamination) collected from the non-pilot kerbside rounds was 2.5kg per household per week (130kg per household of recycling per year). The volume of recycling (including contamination) collected from the pilot round was 3.1kg per household per week (160kg per household of recycling per year). This equates to a 23% increase in the volume of recycling collected on the pilot.

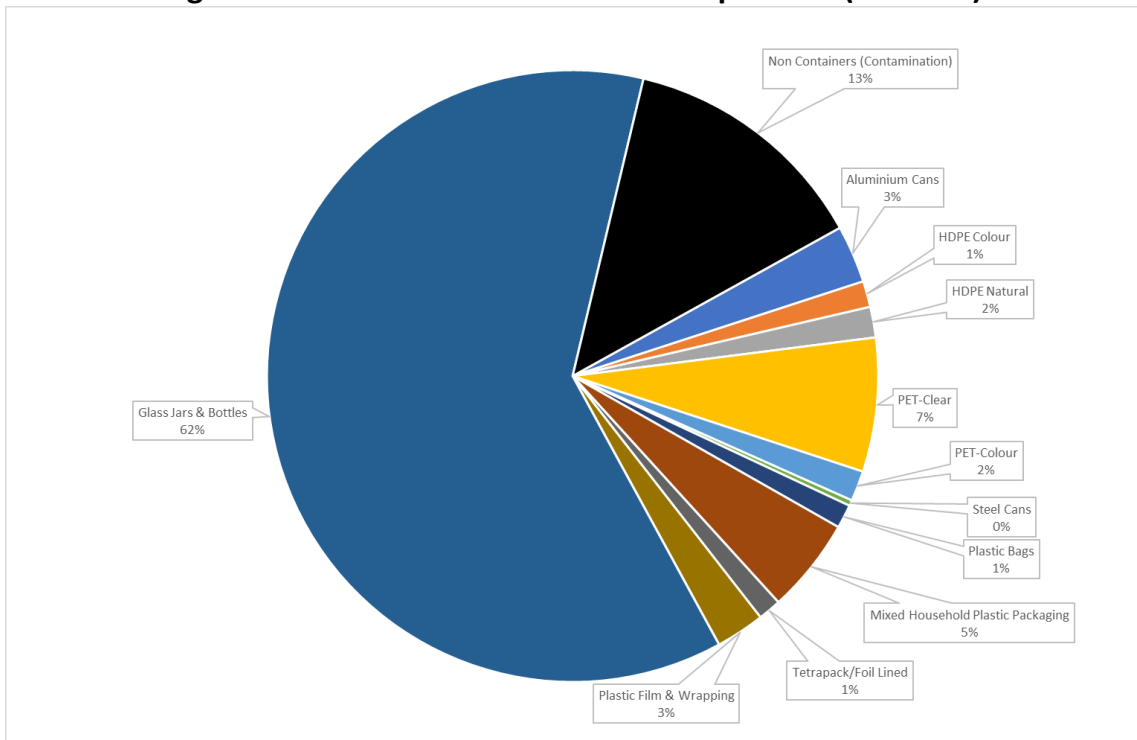
2.7 tonnes of recycling deposited at the MRF from the waste collection pilot has been sampled to assess the quality of the material. During the same period 10.4 tonnes of non-pilot recycling was sampled to allow a comparison of the quality over the same period.

Figures 12, 13 and 14 illustrate the composition of the red lidded wheeled bin (paper and cardboard), blue lidded wheeled bin (plastic, cans and glass) and the composition of the recycling sacks from the non-pilot inputs.

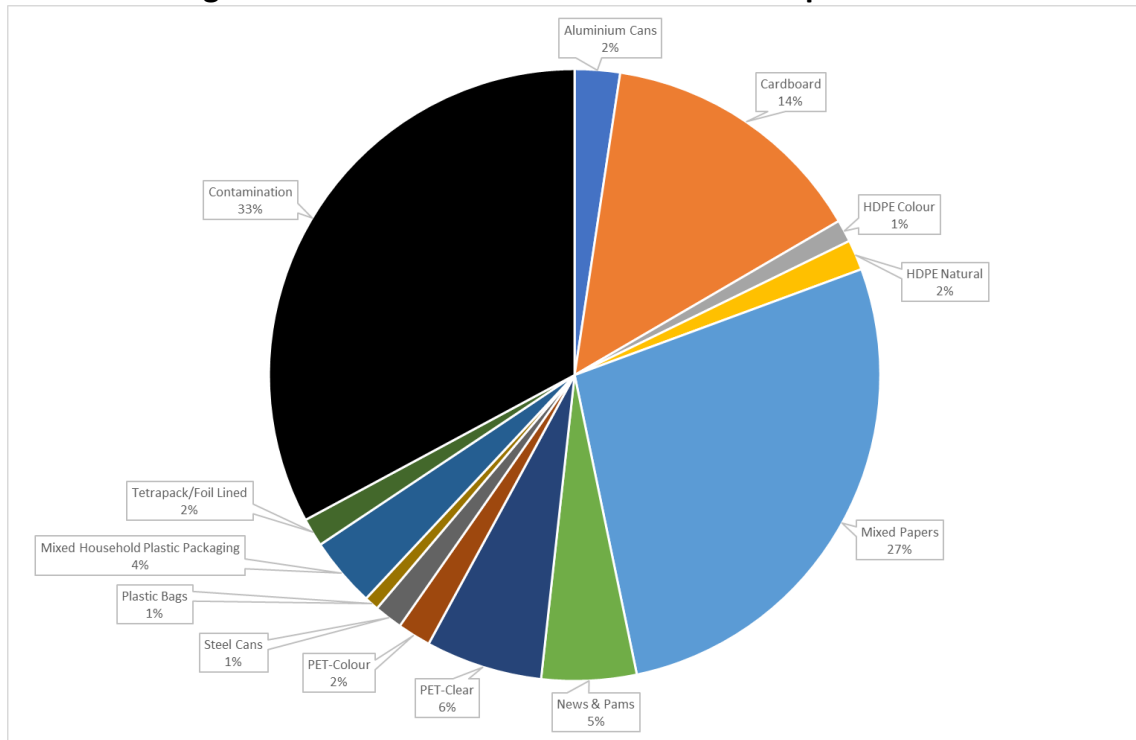
**Figure 12 – Waste Collection Pilot Composition (Red Bin)**



**Figure 13 – Waste Collection Pilot Composition (Blue Bin)**



**Figure 14 – Waste Collection Non-Pilot Composition**



The percentage of non-target and prohibited substances (i.e. contamination) in the incoming loads of non-pilot recycling between November 2020 and January 2021 was 33%.

The percentage of non-fibres (i.e. contamination) in the red lidded bin or red box over the same period was 14% and the percentage of non-containers (i.e. contamination) in the blue lidded bin or blue box was 13%. Taking the recyclable materials as a whole, the net contamination of the incoming loads across the pilot was 13.8% (equates to a 58% reduction in contamination)<sup>1</sup>.

## 8. Waste Collection Pilot Crew Satisfaction Feedback

A feedback session was held with the crew on 24 February 2021. The following points were raised by the crew.

- Side waste collection was raised as the biggest issue and was impacting on crew productivity and defeated the objective of “safer” collection system.
- It was identified that the same properties were culpable of placing side waste out each week and the crew suggested testing the waste being left and having it collected by a separate crew to assess the volume.

<sup>1</sup> Fines (sub 45mm) fraction was excluded from the calculation of composition of the pilot as a future recycling contract would apportion the fines over the input material effectively cancelling out the impact.

- Boxes were not considered to be the best collection system for Special Kerbside properties. The crew raised health and safety concerns (difficult to load into a bin lift vehicle) and productivity issues (taking 20 minutes extra to do a street on boxes than sacks).
- A view from the crew is that due to the footprint of the boxes being similar to the bins, and the majority being left on the street, a smaller bin may be better from a resident and service perspective.
- An alternative suggestion from the crew was colour coded recycling sacks (blue week and red week).
- The 60:40 split body vehicle is fitted with two lifts for the 60% void and a single lift for the 40% void. This is the maximum number of bin lifts available on a standard refuse vehicle and inherently meant that the loaders needed to wait for the smaller side bins being lifted. Two passes per household with a single void vehicle was tested when the vehicle suffered a failure and the crew reported that was not significantly slower.
- The crew feel that bins are safer and they stated that they have sustained no injuries and had to report zero incidents attributable to the wheeled bins to date.
- The crew stated that the boxes are harder to load and heavier.
- The crew reported that black sacks can be heavy and not easy to load into a wheeled bin vehicle. *The wheeled bin vehicles are not designed for regular loading of waste in sacks or boxes due to the load height and the prevalence of side waste raises concerns for staff welfare in addition to the “greenest city” aspirations discussed above.*
- The pilot on the Lakes is working “great” residents are engaged with the recycling scheme whereas before most waste presented was residual.
- The loose sack waste in communal bin cupboards is a problem and the crew would like to see the properties move to Eurobins in the future. *It was explained that the Eurobin service is a discretionary paid for service and some users are reluctant to pay. Access and bin space are also sometimes a factor.*
- The crews reported that residents are not really using the battery containers and many are using other containers including battery bags, sandwich bags and ice cream tubs.
- Crew asked whether the council had explored “[RFID] chips” in bins as a way of monitoring collections, missed collections and recycling scheme participation. *MKC commented that this is something we had looked into and could look into further for the wider rollout if approved.*
- Crew mentioned that they could use bin hangers to mark incorrect presentation e.g. contamination, not presenting on boundary, side waste issues and other educational material. *MKC commented regarding the Keep Britain Tidy programme but that bin hangers along with other forms of communication would be trialled.*

- The crew commented that the containers (blue) week went better than expected as although there was more weight to the bins which results in more tipping they were able to load more properties than expected due to the density of the material and its compaction within the vehicle.

MKC thanked the Serco crew as ambassadors of the Waste Collection Pilot.

***Crew Quote - Safer: "I think it is better to go home and not be in pain after work!"***